ANALYSIS OF ANTHROPOMETRIC STUDIES TO GENERATE INFORMATION FOR CLOTHING DESIGN

1Sharipova Saodat Islomovna
Doktor of Philosophy, PhD, Bukhara Engineering Technological institute,Uzbekistan,
2Xabibova Munavvar Shamsulloyevna
Master's degree,
Bukhara Engineering Technological institute,Uzbekistan.
https://doi.org/10.5281/zenodo.7375432

ABSTRACT

Based on the analysis of the results of foreign anthropometric studies, it has been established that on a global scale there is a high dissatisfaction of the population with proportionate and well-fitting clothing that satisfies needs, the expediency of conducting high-tech regional anthropometric surveys of the population has been determined to ensure consumer satisfaction, as well as personalization of the virtual three-dimensional representation of each person.

Anthropological research carried out over the past century is not only of great importance for the development of science, but is also widely used in practice in various fields, including medicine, physical education and sports, forensic science and, of course, in light industry.

Information about the surface of human figures is becoming increasingly important in various applied aspects, so, by the beginning of the XXI century. a new direction of integrative biomedical anthropology has been created as an interdisciplinary synthesis of various anthropological knowledge about a person, including research in the field of clinical medicine, physical culture and sports, etc. [one]. Measurement of anthropometric characteristics during human movement (Medved V., 2000) helps to determine the kinematics of movements and myoelectric changes associated with motor activity, which is important for restorative and sports medicine [2].

At present, high-tech methods for obtaining anthropometric information make it possible to respond to many urgent challenges of our time. D. Zhang, G. Lu (Zhang D., Lu G., 2013) and other American scientists, various characteristics of the surface of the human body are the basis of biometric methods for automatic identification and authentication of a person based on 3D visualization, search, comparison and synthesis algorithms , which are becoming increasingly important in automated computer applications of public security, security, access control, forensics, banking, etc. [3].To identify people using publicly available databases, including searching for missing persons, British scientists (Choudhury S.D., Tjahjadi T., 2013) have developed a method for recognizing and analyzing the spatiotemporal form of a person's dynamic movement, that is, his gait, regardless from his speed, clothes and hairstyle [4].

Based on the measurement of the orientation of anthropometric points using inertial sensors worn on the body, German researchers from the Technical University of Munich (Schwarz L.A.

et al., 2012) proposed a method for detecting anomalous movements of the human body, which makes it possible to automate the analysis of visual and sensory observations, provide an objective assessment of the nature of activity and poses of athletes to control the technique at the competition. To determine the volume of the human body and the percentage of fat in the composition of his body, American specialists (Pepper M.R., et al., 2011) introduced the technology of laser three-dimensional (3D) scanning of the surface of the human body [1].

However, the use of only typical figures for the design of mass-produced clothing does not provide sufficient consumer satisfaction with the quality of fit. To study this problem, Oklahoma State University (Petrova A., Ashdown S.P., 2012) conducted a comparative analysis of American clothing size systems designed for typical [1] and atypical figures of Americans by expert evaluation of the quality of the fit of jackets made according to the dimensional characteristics of each of the systems and photographed on respondents with different physiques. The results of the study showed that the best fit was for products that took into account additional dimensional features of figures, and the worst fit was noted for figures with a greater difference between chest and hip circumferences (hip-bust drop) [1].

Thus, the standards existing in the global framework, including the dimensional characteristics of the selected typical figures, are aimed more at solving the production problem of optimizing the number of sizes of manufactured products than at increasing consumer satisfaction with the quality of fit and proportionality of clothing, which indicates the importance of a deeper anthropometric analysis of the population with more detailed description of the surface of human figures. Turkish researchers A. Varushkan and E. Bulgan (A. Vuruskan, 2011) implemented a national program to substantiate dimensional standards for the industrial production of clothing based on 3D scanning technology, which made it possible to classify the physique of the population (Fig. 1.1), as well as develop automated applications for carrying out anthropometric surveys and measurements of own figures (made-to-measure) [5]. It should be noted that the established approach of subjective-visual assessment to determine the features of the physique is being replaced by methods for quantifying the parameters of the shape of the surface of the human body.
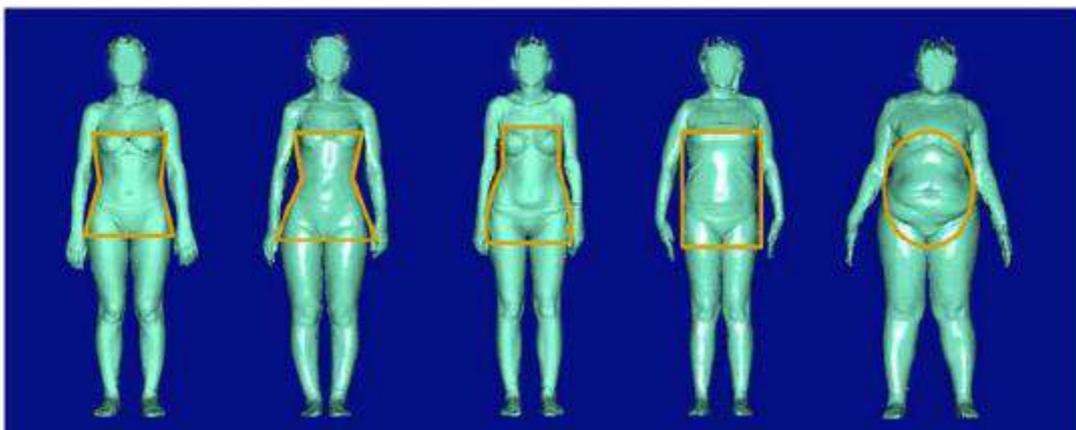
Figure 1- Fragment of the classification of the physique of female figures according to three-dimensional scanning in Turkey (2011) [Vuruskan].

In 2013, in Germany, German scientists E. Hlaing et al. (Hlaing E.C. et al., 2013) conducted an anthropometric study of various types of the lower part of the female body, reflecting a

specific target group of the German population, the prospects for the use of which in the clothing industry are presented in the figure 2 [6].
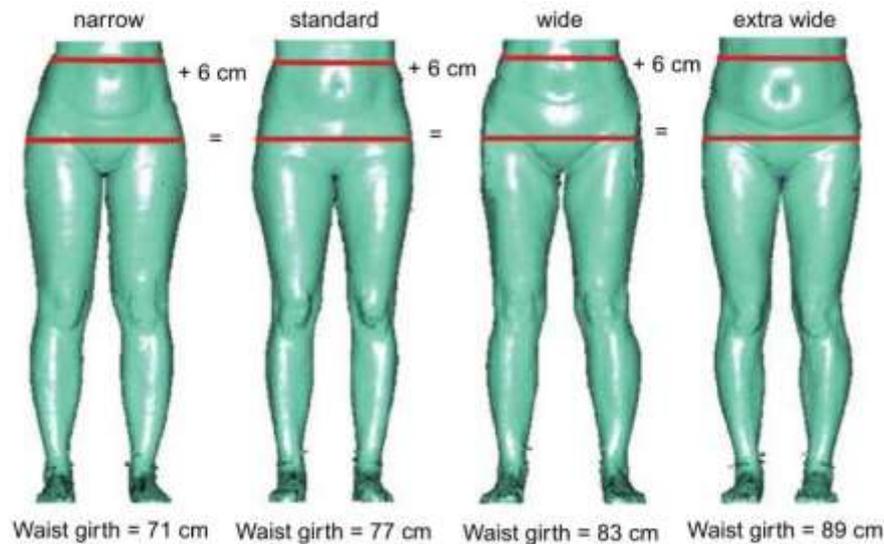
Figure 1.2 - A fragment of the classification of the physique of the lower part of female figures according to 3D scanning data in Germany (2013) [6]

The modern approach to evaluating an organism as a whole is based on an individual-typological anthropological approach, which is based on a fundamental, integral characteristic of a person. The general constitution is characterized by the functional unity of all morphological, physiological and mental properties of a person, which allows the body to respond in a certain way to the effects of the external environment [7]. The unique individuality of each person depends on both the territorial and age and sex groups. At the same time, in many industries, the average statistical approach to a person is still widely used without taking into account his individuality, regional and morphological characteristics, which significantly reduces the effectiveness of the planned impact on a particular person, including the sale of garments to him.

Thus, the analysis of the results of foreign anthropometric studies has established that on a global scale there is a high dissatisfaction of the population with proportionate and well-fitting clothing that satisfies the needs, the expediency of conducting high-tech regional anthropometric surveys of the population, allowing to ensure consumer satisfaction, and personalization of the virtual three-dimensional representation of each person .

References:

1.I.A. Petrosova. Development of a methodology for designing an external form of clothing based on three-dimensional scanning // Diss. doc. tech. Sciences. M., 2014. - 412 p.

2.Medved V. Measurement of human locomotion.- Boca Raton, Florida: CRC press, 2000.- 272 p.

3.Zhang D., Lu G. 3D Biometrics: Systems and applications.- Springer, 2013. - 350 p.

4.Choudhury S.D., Tjahjadi T. Gait recognition based on shape and motion analysis of silhouette contours // Computer Vision and Image Understanding. - 2013, Vol. 117, Is. 12. – P.1770-1785.

5.Vuruskan A., Bulgun E. Identification of female body shapes based on numerical evaluations // International Journal of Clothing Science and Technology.- 2011, Vol.23, Is.1.- P.46-60.

6.Hlaing E.C., Krzywinski S., Roedel H. Garment prototyping based on scalable virtual female bodies // International Journal of Clothing Science and Technology.- 2013, Vol.25, Is.3.- P.184-197.

7. Sharipova, S. I. (2015). Mode and median of the variation series of anthropometric characteristics of students of vocational colleges in the Navoi and Bukhara regions. Young Scientist, (9), 358-359.