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The Artistic Anatomically Examination of the Turkish Women's Heights and Some Body Proportions

S. Cikmaz, A. Yilmaz, R. Mesut

Faculty of Medicine, Department of Anatomy, Trakya University, Edirne, Turkey

In this study, we tried to examine the body proportions of Turkish women according to the artistic anatomy and how the change of lengths of the parts that form the body effect the body height.

495 female students with a 20,7 mean age participated in our study. They had no orthopaedic and physical defect and were being educated in Trakya University Medical Faculty. The Harpenden anthropometer was used in measurements. The distances, mean values, standard deviations, proportions to body height and correlation coefficients in our study are these respectively: 1) Basion-vertex (body height): 159.86cm ± 4.97, 2) Basion-gnathion: 136.25cm ± 4.39, %84.20, 0.89, 3) Basion-acromiale: 130.92cm ± 4.4 %80.95, 0.81, 4) Basion-suprasternale: 127.50 ± 3.30, %79.83, 0.81, 5) Basion-thelion: 112.08 ± 4,44, %56.14, 0.8, 6) Basion-omphalion: 94.08cm ± 3.03, %59.56, 0.80, 7) Basion-iliospinale: 87.40cm ± 2.85, %55.77, 0.75, 8) Basion-trochanterion: 79.58cm ± 1.59, %50.59, 0.67, 9) Basion-symphysion: 77cm ± 3.21, %50.02, 0.67, 10) Basion-gluteale; 67.50cm ± 2.81, %44.62, 0.67, 11) Basion-dactylion: 60.58cm ± 1.69, %37.94, 0.55, 12) Basion-tibiale: 41.08cm ± 2.71, %24.77, 0.45, 13) Basion-sphyrion: 7.83cm ± 0.62, %4.80, 0.28.

Key words: Artistic anatomy, anthropology, proportion.

Introduction

Artistic anatomy is a subspecialty of anatomy which, through all works of art, aims at describing the movement and shape of human body, placing its different parts correctly and exploring the ways of describing the changes caused by movements at the best, by utilizing various proportion and separation plans [1, 9, 12].

Within 5000 years' time, artists have examined the human body, which has been a subject for their works, from a geometrical perspective and have come to realize that there are various proportions between the parts of the body. Later on, they have standardized these proportions and tried to set the rules that they would use in their own works of art. Since the early ages, these proportions introduced by the scientists and artists have been called "CANON", and the unit measurement of each canon has been called "module". In many canons, parts of the body such as the length of the foot, the head, the face, the 3rd finger of the hand have been used as modules.

The oldest and the most important studies unifying the art and the anatomy, were conducted by Leonardo Da Vinci, while in the scientific sense, it was French anatomist Dr. Paul Richer who handled these studies. Dr. Richer presented his findings in his book "Anatomie Artistique". Besides, he is noteworthy for his researches on the women's body [2, 4, 6, 8, 9, 11].

In this study, we have aimed at examining the body proportions of Turkish women in terms of artistic anatomy and in what amount the change in the lengths of the parts forming the body effects the height of a person.

Material and Methods

Our study has been carried out on 495 female students, studying at the Faculty of Medicine, Trakya University, whose mean age is 20,7, with no orthopaedic and physical disabilities. Harpenden anthropometer was used in measurements. Measurements and findings have been listed by women assistants in tables prepared beforehand.

We have utilized the anthropological landmarks in the measurements providing the basis for our study. However, for some of the height measurements, we have used surface anatomy landmaks which are not utilized in anthropology, but preferred in plastic anatomy. In normal anatomic position, the distance between the foot basis and anthropological points has been measured (Fig. 1):

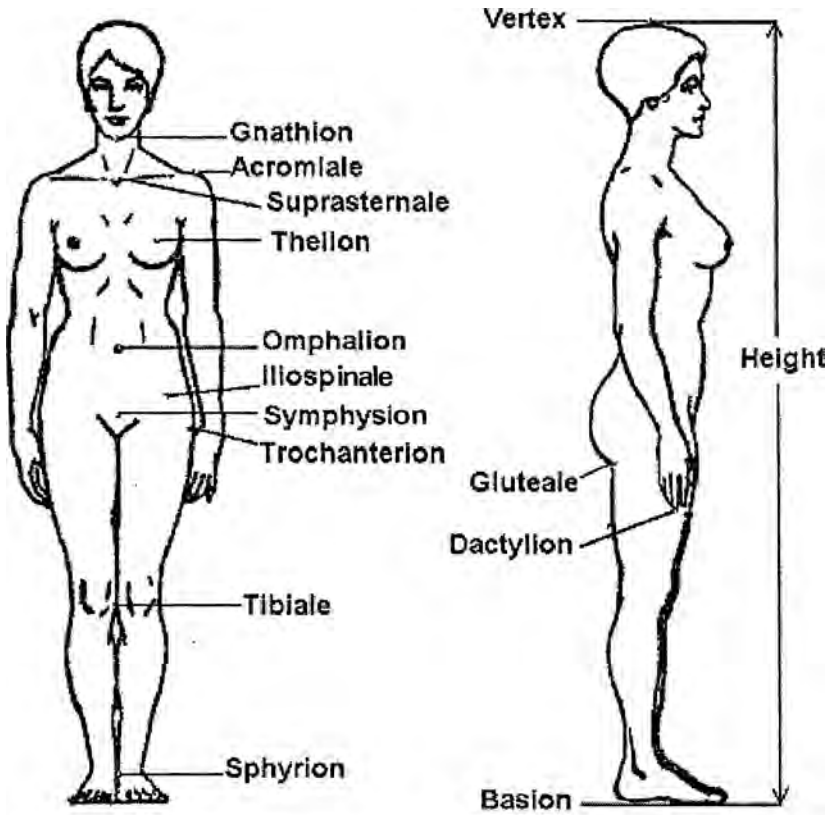

Fig. 1. Anthropological points that are used in measurements

Vertex: In anatomic position, its the highest point of the head.
Gnathion: The midline point of the bottom edge of Mandibula.
Acromiale: The point matching Angulus acromii.
Suprasternale: Midpoint of incisura jugularis sterni.
Thelion: Midpoint of Papilla mammae.
Omphalion: Upper midpoint of the navel.
Iliospinale: The point matching Spina iliaca anterior superior.
Trochanterion: The highest and the most lateral point of Trochanter major.
Symphysion: The highest point of Symphysis pubis.
Gluteale: Midpoint of Plica glutealis.
Dactylion: Matches the tip of the longest finger.
Tibiale: The highest point of Condylus medialis tibae.
Sphyrion: The lowest point of Malleolus medialis [5, 7].

Results

After recording the measurements of 495 female students with a mean age of 20,7 in the forms prepared beforehand, we have calculated, for each distance, the arithmetic average of the group, standard deviations, their ratios to the stature and their correlation quotients. We have shown the results in table 1.

T a b l e 1. In our research, the height of women, on whom measurements have been made, the standard deviation, their rate to the height and the correlation quotients have been shown

Measure's	Measured values (cm)	SD (±)	The proportion to body height (%)	Correlation (r)
Basion-vertex	159.86	4.97		
Basion-gnathion	136.25	4.39	84.2	0.89
Basion-acromiale	130.92	4.42	80.95	0.81
Basion-suprasternale	127.5	3.3	79.93	0.81
Basion- thelion	112.08	4.44	70.11	0.83
Basion-omphalion	94.08	3.03	59.56	0.8
Basion-iliospinale	87.4	2.85	55.77	0.75
Basion-trochanterion	79.58	1.59	50.59	0.67
Basion-symphysion	77	3.21	50.02	0.67
Basion-gluteale	67.5	2.81	44.62	0.68
Basion-dactylion	60.58	1.69	37.94	0.55
Basion-tibiale	41.08	2.71	24.77	0.45
Basion-sphyrion	7.83	0.62	4.8	0.28

Discussion

Since every individual has a different body type, it is inevitable that the anthropometric measurements yield different results. The reason to this is that socioeconomic conditions such as the place where a person lives, his life style and eating habits have

Table 2. Data of the other researchers (cm)

Measure's	Inan, A. [12], n=20263	Yildiz, Z. et al. [7]. Mean value of age, 22-35, n=100	Kahraman, G. et al. [8]. Mean value of age, 20-35, n=200
Basion-vertex	152.2	161.79	162.64
Basion-gnathion	-----	------	141.57
Basion-trochanterion	-----	82.54	-----

an impact on the growth period. Consequently, this fact should not be neglected when comparing the data acquired through measurements.

In our study, 495 female student with a mean age of 20.7 have been involved and their average height has been found to be 159.86 cm. When we compare this result to the previous researches on women, a parallelism in the results of Yildiz et al. and Kahraman et al. demonstrated; it is much more than the height that A. Inan tested in 1937 with 20263 women. We assume that the reason Kahraman and his friends found longer distances than our data represents the reason for the the difference in height that creates a disadvantage for other researchers [3, 4, 11].

The focus of our study is the effect of some parameters on height. Given this assumption, we have examined the correlation between the average values of some body parts and the average height. As a results of the correlation analysis, we have found that the parts that affect the height most are gnathion, acromion, suprasternale, mamillare, omphalion, iliospinale.

A correlation between the height and sphyrion, %4,80 of the average height and tibiale length, %24,77 of the average height does not exist. There is a medium correlation between the height and trochanterion and symphysion bony landmarks (for trochanterion r = 0,67, for symphysion r=0,67) which are the other points of lower extremity. This shows that on the stature, thigh of the lower extremity is more important than leg.

In the landmarks on the upper body (omphalion, mamillare, suprasternale and acromiale), the correlation increases when moving towards the top. These results show that on the stature, axial skeleton system plays a more important role.

The correlation of the gnathion height which is %84,20 of the stature is of the greatest degree with 0,89.

In conclusion, the average stature of Turkish women today, increases much more rapidly compared to the past, contributed the most by the upper body, and a little bit less by thigh distances. In appearance, Turkish women have short legs and long upper bodies.

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