RESEARCH OF THE TYPES OF POSTURES OF THE WOMAN FIGURE FOR THE PURPOSE OF DEVELOPING HIGH QUALITY GARMENTS

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Abstract: The high interchangeability of produced garments and the increased requirements towards the quality of production is conditioned by the growing individualization of orders, this is why it is important to perform systematically anthropometric researches of the modern female population for the purpose of revealing the peculiarities of constitution of the figures of this consumer group.
During the researches, the existing classifications and data on the postures and types of body constitution of women were studied. The point of departure was the healthy human vertebral column and the position of human body in normal posture. The aspects of possible deviations from the normal body posture were studied. Taking into consideration the fact that various age groups were examined in the paper, various age-related modifications of the vertebral column and, thus, of the human posture were studied.
To attain the established goal, anthropometric researches were performed on women of various age groups. The studied women were taken photos; using the photos, the figure contours were obtained, and the types of body constitutions and postures were studied according to the methods described in the special literature. The obtained data were analyzed and presented in graphic form for a more precise visualization of the results and for a more exact interpretation of those results. The result of the performed researches was the classification of postural defects, revealed in the frontal and sagittal planes, taking into consideration the eventual peculiarities of the individual figure of any age. This classification is meant to facilitate the work of the designers at the stage of projecting or when making corrections in the design of garments.

Key words: anthropometric researches, classification of postural defects.

1. INTRODUCTION

The modern garment industry is generally oriented to the young and middle age consumers, the basic mass of produced garments is meant to satisfy the preferences and expectances namely of these age categories, almost not paying attention to the garments for the elder age group. Namely the targeted projecting will lead to the increase of quality of garments for consumers of different age categories, and also for women with different body constitutions and postures. As of today, when mainly the typical approach is used in the projecting of garments, the young women having a body constitution and posture not characteristic to their age group have to wear garments not satisfying their esthetic preferences [1], the research performed in this paper is meant to help solving the above mentioned problems.

The development of classification of the frequently revealed postural defects would facilitate the process of creating designs for the figures with deviations from the conventional typical ones, and the anthropometric data on the age-relating modifications of posture will favor the increase of quality of designs, fits and production as a whole.

2. GENERAL INFORMATION

The main morphological indices laying at the basis of the determination of external human body form include: total or general measures, proportions, body constitution and body posture. Any

morphological body index is subject to changeability. The form, degree of manifestation and direction of changeability is different depending on the index, and is determined by the impact of such factors as the age, sex, social environment, peculiarities of the biochemical livelihood of the organism [2].

During the design of new fashions, the designers use to be oriented to three main types of figure: ideal, typical and individual. The ideal figure is the contour and image of the figure which, under the influence of various masterpieces, style, fashion and peculiarities of life is principal and serve as an etalon. The typical figure represents the statistically average figure, determined by the corresponding standards and measure typology of a specific country. The individual figure represents the real figure of the consumer, characterized by form and measures deviating more or less from the typical ones, and has various deviations in the posture, proportions and peculiarities of body constitution [3].
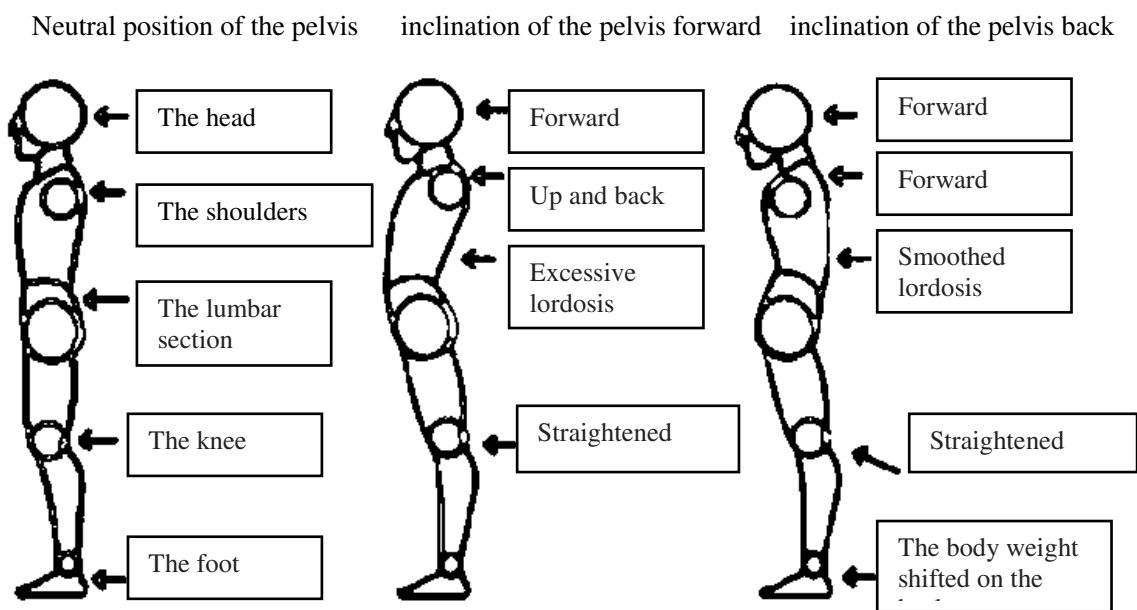
The posture, like other morphological indices, determines in at a great extent the peculiarities of the external human body form. This is why the posture is long ago the object of special attention both of the anthropologists and physicians and of the specialists of the garments industry [4].

The modern science examines the posture as one of the main characteristics of the equilibrate vertical position of the human body in calm and upright position [5].

When characterizing the type of posture, special attention is paid to the curvature of the vertebral column. In the classification proposed by the Polish researcher N. Voljanski, the curvature of the vertebral column is subdivided into three complexes, each of the includes three types. According to the performed researches, the classification proposed by N. Voljanski may be used both for the characteristic of children's posture and adults' posture. The complex of equilibrated postures is found commonly often in all the age categories, it is also accepted to consider that the lordotic postures are more characteristic to younger women and children, and the kyphotic ones – for older women.

The upright position is mainly characterized by the position of the pelvis, which correctly is in neutral position. At that the natural lumbar lordosis is kept, the shoulders are not protracted or retracted, and are not elevated. Knees are minimally bent, the body weight is uniformly distributed to the front and back part of the foot, and the head is in a balanced position (figure 1).

The upright position

Neutral position of the pelvis   inclination of the pelvis forward   inclination of the pelvis back

The head | The shoulders | The lumbar section | The knee | The foot

Forward | Up and back | Excessive lordosis | Straightened

Forward | Forward | Smoothed lordosis | Straightened | The body weight shifted on the

Fig. 1: Upright body position.

The position of the gravitation center of the figure has a great impact during the determination of the type of posture. When we look at a normal, equilibrated body, we can see that its gravitation center passes through the midst of the ear, shoulder, pelvis, knee and ankle-bone. It is in this position when the vertebral column has minimally possible stress [6].

When the posture changes, the gravitation center also displaces, increasing the stress on certain sections of the vertebral column and favoring the onset of its pathologic conditions. There are three types of postural defects [5]:

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Type 1 – postural defects in the sagittal plane, manifested by incorrect proportion between the physiological curvatures of the vertebral column;

Type 2 - postural defects in the frontal plane, characterized by a deviation of the vertebral column from the middle line (when looking from behind);

Type 3 – combined defects.

One of the most common postural defects in the sagittal plane is the slouching and round back. Both types of defects are characterized by the increase of the retracted curvature of the vertebral column and decreased inclination of the pelvis forward. The thoracic cage seems to be low in people with round back. The person often has half-bent legs when in upright position, compensating thus the insufficient curvature forward of the vertebral column.

Another widespread postural defect is the „flat back". This defect onsets if the physiological curvatures in the pectoral section of the vertebral column. In case of a flat back, the pelvis has a very poor inclination forward, the physiological curvature backwards in the pectoral section of the vertebral column is missing or very mild.

Another type of postural defect in the sagittal plane is related to the increase of the curvature of the vertebral column in the lumbar section and is called lordosis or lordotic posture. In this postural defect the pelvis inclination forward is increased. The lordotic pasture is, as a rule, accompanied by changes in form and increase of the belly dimension.

The postural deviations may be combined; in such case we speak about combined defects, for example, in case of a round or flat back, the increase of the lumbar curvature o the vertebral column may be observed, this is called round-concave or flat-concave back.

3. EXPERIMENTAL RESEARCHES

A series of anthropometric measurements were performed on a sample of women from five age categories: from 18 to 24 years; from 25 to 34 years; from 35 to 44 years; from 45 to 54 years and from 55 to 80 years. The total number of examined – 50 women, 10 women in each examined group. Thus, during the study of all the age groups, it is possible to take a conclusion on the prevalence of certain peculiarities of posture and body constitution in certain period of women's life, and also to examine variants of correction of the typical designs of the garments, taking into consideration the revealed deviations.

Photos were taken of the examined women in frontal and sagittal planes. On the basis of the photos, the contours of the figures were marked, which were studied according to the method of Voljanski N. (table 1, figure 2).

Table 1: *Study of postures of women's figures of all age categories according to the method of Voljanski N*

Indicator	К			∑K	R			∑R	L			∑L	Combined types	∑
Group	К1	К2	К3		R1	R2	R3		L1	L2	L3			
18-24	-	-	-	-	8	-	-	8	1	-	1	2	K1R1-2; K2L3-1; K3L1-1	5
25-34	3	2	-	5	2	3	-	5	-	-	-	0	-	0
35-44	3	2	-	5	-	1	-	1	3	-	1	4	R1L1-1; R2L2-1	2
45-54	2	-	1	3	1	1	1	3	4	-	-	4	R1L1-1	1
55-80	3	1	2	6	1	-	-	1	-	-	3	3	K1L3-2; K2L3-1	3

4. CONCLUSIONS

Analyzing the obtained data, it is possible to affirm that in the youngest age group, the figures with normal posture are prevalent – 80%, but it is in this group were most cases of combined types of
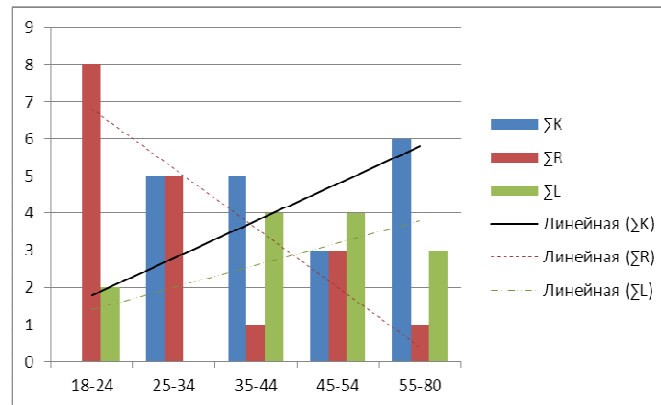
Fig. 2: *Distribution of the studied women by types of posture, according to Voljanski N.*

posture is revealed, namely the combination between the normal and kyphotic postures, lordotic and kyphotic postures. Ain all the studies figures, the kyphotic modification of the vertebral column is situated in the neck section of the vertebral column. This modification, and also the number of studied women having this modification in this studied group, may be explained by the habit of using mobile devices frequently and long-time. In medicine, such modification has at present the name of „text neck syndrome”, earlier such modifications were found in the representatives of certain professions related to the long-time staying in a certain position when the neck is inclined forward, and was not so widespread. In the case of the performed study, 50% of the studied women have this syndrome.

In the age group of women from 25 years to 34 years, the figures with kyphotic position of the vertebral column are prevalent; they represent 50% of the total number of studied people. The other 50% have normal posture. No combined types of postures were revealed in this age category.

In the group from 35 to 44 years, 50% of the studied women have kyphotic postures, 10 % have normal postures and 40 % have lordotic postures. Two figures hav combined types of posture, with lordotic curvatures in the lumbar section of the vertebral column.

The women from the age category from 45 to 54 years have approximately equal distribution of posture types: 30% kyphotic, 30% normal and 40% lordotic postures. One representative of the group has a combined type: normal-lordotic posture with lordotic modification in the area of the lumbar section of the vertebral column.

In the eldest age group, there is an evident prevalence of the kyphotic types of postures – 60% of the total number of studied women, 10% normal and 30% lordotic postures. In this group, there are three people with combined type of posture: kyphotic-lordotic curvatures of the vertebral column, kyphotic curvature in the neck and pectoral sections of the vertebral column and lordotic curvature in the lumbar section. The prevalence of kyphotic postures in this category is conditioned by the age-related changes in the organism of the women.

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