

**THE PRINCIPLES OF DESIGN OF CLOTHES FOR PEOPLE
WITH THE LIMITED ATHLETIC ABILITY**

**ПРИНЦИПЫ ПРОЕКТИРОВАНИЯ ОДЕЖДЫ ДЛЯ ЛИЦ
С ОГРАНИЧЕННЫМИ ФИЗИЧЕСКИМИ ВОЗМОЖНОСТЯМИ**

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In article the principles of design of clothes for persons with a limited athletic ability, on the basis of existing scientific developments in this area are considered.

В статье рассматриваются принципы дизайна одежды для лиц с ограниченными физическими возможностями на основе существующих научных разработок в этой области.

Keywords: clothing design principles, disabled people, dimensional characteristics, constitution, morphological features.

Ключевые слова: принципы дизайна одежды, люди с ограниченными возможностями, размерные характеристики, конституция, морфологические особенности.

Now in Republic of Kazakhstan active development of sport among persons with various deviations in the state of health is observed. Also the range of the sports offered for disabled athletes extends. At the same time the number of the people with restrictions and deviations in the state of health involved in sports activities increases. Now people with visual impairment, hearing, with a cerebral palsy, a paraplegia, orthopedic violations, with the replaced internals and other physical violations can play sports.

Identification and resolution of conflicts, bringing the person with somatic defects (congenital or acquired) and also with violation of functions of a musculoskeletal system to a dependency from services of people around in interaction with the usual clothes calculated on physical capacities of healthy people is relevant. In the functional plan its fitness as to climatic, and social conditions became a basis of

any suit. The fitness is expressed, first of all, in rationality of its forms and designs for implementation of vital processes, household occupations therefore the dress code in the majority of examples is structurally subordinated to the nature of movements and convenience of their implementation [1].

Actual is the identification and resolution of contradictions to development of the theory, methodology and practice of unification of a design and process of constructive modification. The technique of constructive modification is universal, applicable for any assortment groups of products, any set options of modification and can be used for development of constructive and modification ranks of details. The method of determination of differential and absolute sensitivity at perception of clothes is in own way universal and can be used for researches: various contingent of examinees, various design data of products - plan metric

points of a design, the sizes of details, changes of provisions of constructive and decorative partitioning, changes of length, tilt angles, curvature of lines [2].

Three main types of a constitution depending on a form of horizontal section of a thorax and value of parameters for narrow, average, huge and bulky types of a constitution and the athlete type for 60% of additional dimensional signs are established. It is proved that change of a shape of a thorax has significant effect on sizes of front backward and side balance, solutions of tucks and levels of position of lines of a breast, waist and hips. Ways of correction of problem zones of a constitution which are carried out in the physical or optical ways are established [3].

The existing problem of design and production of functional, esthetic, comfortable clothes for disabled people - wheelchair invalids can be solved by implementation of the innovative project on production of such clothes possessing also adaptation function. The essence of innovative development consists in creation of the clothes differing in the ergonomic design providing convenience of clothing and removal, convenience and safety of use of separate elements; the feature of a constitution and a way of life of disabled people allowing to adjust - wheelchair invalids, providing comfort of sub clothes space taking into account service conditions that in general allows to provide qualitatively higher level of vital activity of disabled people.

The clothes for disabled wheelchair invalids have to consider features of a constitution and meet the requirements of their way of life have the cost, available to disabled people, and also to be produced in lots. The release of adaptation clothes for disabled people - wheelchair invalids in the Republic of Kazakhstan has huge social effect. The complexity of the organization of production of clothes for disabled people and, in particular, for disabled amputees and persons with defects of a humeral belt consists, first of all, in the multi-purpose nature of a designing process of products of the considered assortment group. On the one hand, these clothes have to conform to esthetic requirements and not emphasize disability of the consumer. With another – to provide, an op-

portunity independent (or with the minimum help) uses of these clothes at removal and putting on, also compliance of products to physiological and hygienic needs of the person [4].

Development of original decisions is, as a rule, carried out taking into account interrelations of elements of the person an artificial limb-clothes system. This direction of works gained development in developments of functionally esthetic clothes as means of household rehabilitation and social adaptation of disabled people.

The principles of creation of clothes for disabled people represent the concept of shaping of rehabilitation clothes for disabled people according to which the device of special clothes in the functional plan has to provide to disabled people use of a product without assistance, and in the esthetic relation its appearance should not draw attention of people around [5].

The technique of definition of dimensional characteristic for industrial design of clothes for people with a limited athletic ability is known and also intervals of variability of the main properties of the lower extremities, lining for maintenance of level of thermal comfort, are established. Along with it techniques of design of adaptation trousers and assessment of quality of adaptation clothes are developed by method of an electromyography [6].

As show results of the conducted researches [7], people with lack of function of walking and standing want to have fashionable and comfortable clothes. For the solution of this problem, as well as for development of the direction of rehabilitation of disabled people by means of special clothes in general, there was a development and practical application of distantny technology with use of two types of the hardware and software systems (HSS): "Service" and "Design" [8]. Such distantny technology plays a large role for design of clothes for disabled people as automation of work with information and high quality of its processing accelerate a direct designing process of clothes for people with a limited athletic ability and considerably simplify it.

The semi-adjacent silhouette is the most convenient for the operation of the humeral clothing, the volumes are moderate or large,

and the main structural and decorative elaboration of the models should be carried out in the upper front part of the suit, as the most visible person sitting in a wheelchair. Besides, it is necessary to provide the functional elements providing convenience of use and also its putting on and removal in a suit [9], [10].

The database of the additional dimensional signs characterizing morphological features of bodies of disabled children and necessary for design of ergonomic clothes and also clothes design method is developed for children, patients of a cerebral palsy, on the basis of modification of a standard basic design taking into account morphological features of figures of disabled children [11].

Thus, in the process of designing clothes for people with organic motor abilities it is necessary to observe the following principles:

- application of impressive approach to a clothes designing process on the basis of the theory, methodology and practice of unification of a design and process of constructive modification;

- application of the differentiated approach to creation of clothes taking into account gender and age and anatomic functional features, compensatory and motive and functionality of disabled people;

- respect for interrelation between the disabled person, the technical tool of rehabilitation (an artificial limb, slips) and clothes;

- to consider group of disabled people by the form anatomic and functional violation and also nature of violation of functions [12];

- living conditions of the system "disabled person-clothes-the surrounding environment-rehabilitation effect" and basic requirements to clothes [13];

- body types of disabled person;

- creation of constructive and technological solutions of functional and esthetic clothes.

CONCLUSIONS

Based on the analysis of scientific developments, we proposed design principles that include the use of an impressive and differentiated approach, as well as body type and anatomical and functional dysfunction of a person,

which contribute to the creation of clothing for people with limited motor capabilities that meet the operating conditions and ensuring the safety of her socks.

REFERENCES

1. *Zimina E.M.* Design of knitted cloths of knitted cloths interlacing for functional sportswear: Thesis of Candidate of Technical Sciences. – M., 2002.
2. *Korobtseva N.A.* Theoretical and methodological bases of impressing approach to design of clothes: Thesis of Doctor of Technical Sciences. – M., 2005.
3. *Kozlova T.E.* Improvement of constructive and composite solutions of clothes depending on features of a constitution of the person: Thesis of Candidate of Technical Sciences. – M., 2005.
4. *Savchenkov I.E.* Design of clothes on figures of disabled people with pathological changes of a basic surface and bearing: Thesis of Candidate of Technical Sciences. – St. Petersburg, 2005.
5. *Volkova V.M.* The analysis of a state and solution of a problem of creation of special clothes for disabled people with activity restrictions // Clothing industry. – № 5, 2010. P. 45...48.
6. *Prikhodchenko O.V.* Development and a research of adaptation clothes for people with a limited athletic ability: Avtoref. yew: Thesis of Doctor of Technical Sciences – Shakhty, 2007.
7. *Volkova V.M.* Functional and esthetic clothes for disabled people with defects of the upper extremities//Orthopedics, traumatology and prosthetics. – 1975, № 3. P. 31...33.
8. *Zakhvatova E.V., Tikhonova V.V., Serov T.P.* Assessment of efficiency of action of treatment-and-prophylactic products for massage by method of value judgment of pain//Clothing industry. – 2009, №6. P.26...27.
9. *Starkova G.P.* Methodological bases of design of sportswear from highly elastic materials: Diss. of the Doctor of Engineering. – Moscow, 2004.
10. *Khrapylina L.P.* Rehabilitation of disabled people. – M.: Examination, 2006.
11. *Panferova E.G.* Development of a design method of clothes for disabled children with use of computer technologies: Thesis... Candidate of Technical Sciences. – Moscow, 2011.
12. *Volkova V.M., Golubeva Yu.B.* Formation of requirements to development special clothes for various contingents of disabled people with activity restrictions//medico-social examination and rehabilitation.18 (4). – St. Petersburg, 2015. P. 53...56.
13. *Manukyan K.A., Safina L.A., Hammatova E.A.* Design of clothes to physically disabled people according to ergonomic and operational requirements // The Bulletin of the technological university. – T.20, № 6, 2017. P. 79...82.

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