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**HARBIY XIZMATDA AYOLLAR UCHUN BELGILANGAN
XUSUSIYATLARGA EGA FORMALARNI LOYIHALASH TUZILISHINI
TAKOMILLASHTIRISH**

N.D.Abduraxmanova

Toshkent to‘qimachilik va yengil sanoat instituti

“Moda va dizayn” kafedrasi katta o‘qituvchisi

Sh.R.Bobojonova

Toshkent to‘qimachilik va yengil sanoat instituti

“Moda va dizayn” kafedrasi assistenti

Annotatsiya: *Ushbu maqolada harbiy xizmatchilar uchun izolyatsiya qilingan dala kiyimlarining yangi modellarini yaratishda ularni amaliy ishlab chiqish va joriy etish bilan maxsus kiyim dizaynlarining ergonomik ratsionalligini loyihalash va baholash usullarini takomillashtirish to‘g‘risida ma’lumotlar keltirilgan.*

Kalit so‘zlar: *Materiallar, dizayn, ish sharoitlari, harbiy kiyim, rivojlanish, ergonomik parametrlar, inson xususiyatlari, jihatlari, turli vaziyatlarda qulaylik.*

**СОВЕРШЕНСТВОВАНИЕ СТРУКТУРЫ ПРОЕКТИРОВАНИЯ ФОРМЫ С
ЗАДАНЫМИ СВОЙСТВАМИ ДЛЯ ЖЕНЩИН-ВОЕННОСЛУЖАЩИХ**

Н.Д.Абдурахманова

Ташкентский институт текстильной и легкой промышленности

Старший преподаватель кафедры ”мода и дизайн”

Ш.Р.Бобожонова

Ташкентский институт текстильной и легкой промышленности

Доцент кафедры ”мода и дизайн”

Аннотация: *В данной статье представлена информация о совершенствовании методов проектирования и оценки эргономической рациональности конструкций одежды специального назначения с их практической разработкой и внедрением при создании новых моделей утепленной полевой одежды для женщин-военнослужащих.*

Ключевые слова: *Материалы, дизайн, условия эксплуатации, военная форма, разработка, эргономические параметры, характеристики человека, аспекты, комфорт в различных ситуациях.*

**IMPROVING THE STRUCTURE OF DESIGNING UNIFORMS WITH
SPECIFIED PROPERTIES FOR FEMALE IN MILITARY**

N.D.Abdurakhmanova

Toshkent Institute of textile and light industry

Annotation: *This article shows information about improving the methods of designing and evaluating the ergonomic rationality of special-purpose clothing designs with their practical development and implementation in the creation of new models of insulated field clothing for female in military.*

Key words: *materials, design, conditions of performance, military uniform, development, ergonomic parameters, characteristics of human, aspects, comfort in various situations.*

New modern materials, product design and manufacturing technology are being improved. A comprehensive product quality management system is being implemented. Following it, the textile industry offers a variety of materials, the range of which continues to grow, due to the use of new types of raw materials. The quality of the material remains the main requirement. Not only comfort plays a role, but also wear resistance and strength of the material. Women have different types of clothes [1].

A modern range of domestic and foreign materials for work clothes. Used for sewing insulated work clothes, in terms of fiber composition, basic structural parameters, type of weave and color design. It has been established that the largest share is made up of pure cotton fabrics, and only 5% is made up of fabrics made from chemical raw materials, which is explained by the previously relatively low prices for fabrics made from natural fibers, and, consequently, cheap work clothes.

The parameters of the fabric structure are characterized by a fairly wide range of values that are unreasonably overestimated or underestimated, which negatively affects the consumer properties of clothing. Most fabric articles lack special finishes that enhance their protective properties; the color scheme of the materials is characterized by a narrow range of colors. From this type of material, we are now preparing military clothes for women.

Compliance with the nature and conditions of performance of operational and combat missions is a mandatory requirement when designing new models of military uniforms. The lack of samples of field clothing designed taking into account the anthropomorphological features of the female figure forces women to provide military personnel with men's field clothing of similar standard sizes.

The inconsistency of clothing with the anthropometric characteristics and strength capabilities of the female body causes a significant limitation of the range of movements, general discomfort and leads to the rapid development of fatigue. In this regard, the task of developing scientifically based ergonomic parameters of female military personnel's clothing and, above all, to ensure the dynamic compliance of structures with the motor component of service and combat activities is urgent [2].

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The work is a continuation of the R&D complex of the Department of Design and Technology of sewing products aimed at improving the design methods of ergonomically rational designs of special clothing based on differentiated consideration of biomechanical parameters of human movements in the main joints of the upper and lower extremities.

The use of new computer technologies in this work ensures the effective use of the biokinematic characteristics of human movements, makes it possible to abandon routine operations for planar modification of the initial patterns of shoulder clothing parts, thereby creating the possibility of actively forming a three-dimensional clothing solution with a given level of dynamic compliance. At the same time, the time and material resources spent on designing basic and initial model clothing designs are significantly reduced, which is of particular importance in modern economic conditions [3].

Recommendations for improving the method of designing uniforms for female military personnel:

Consideration of anthropometric and biomechanical features: The use of three-dimensional scanning and other modern technologies to accurately account for the individual characteristics of the figure and movements.

Ergonomics and functionality: Development of constructive solutions that ensure freedom of movement and comfort in various service and combat situations.

Aesthetic and cultural aspects: Taking into account national and cultural characteristics when designing a uniform to ensure its acceptability and conformity with traditions.

Modularity and adaptability: Creation of modular kits that allow you to adapt the uniform to different climatic conditions and service tasks.

Use of modern materials: The use of innovative materials that provide lightness, durability and protection from external influences.

Planar methods for achieving ergonomic rationality of clothing designs. The rational shape and dimensions of clothing details from the perspective of movement dynamics did not allow for the active use of the established relationship between the spatial biomechanical characteristics of the human figure and the principles of shaping the design of clothing and the geometric shape of the unfolding of its details [4].

To achieve this goal, the following tasks were solved in the work:

study of ready-made service clothing samples in order to identify their functional and ergonomic disadvantages and determine the range of parameters that affect the dynamic compliance of clothing with the conditions of military service and combat activities;

investigation of the relationship between the biomechanical parameters of human movements in the main joints and the spatial arrangement of clothing segments

ergonomic evaluation of experimental samples in laboratory and field conditions.;

a geometric model and an algorithm for constructing detail sweeps in the initial (research) version of the three-dimensional computer-aided clothing design (TAPRO) system have been adapted for the construction of straight silhouette shoulder clothing;

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the parameters of shaping ergonomically rational designs of shoulder clothing in the TAPRO system are systematized and recommendations on the choice of their values in the design of insulated special-purpose products are developed.;

it is shown that it is possible and informative to evaluate the thermal protection efficiency of insulated suits using the method of recording infrared radiation (topography of heat fluxes) from the surface of a product worn on a person.

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