Relevant forms of youth suit and transforming accessories and ergonomic approach for their development

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Abstract. The article presents data on the design, composition and design work on the implementation of the design project of a suit and accessories-transformers for young people under the motto "Cold Desert". The article presents the result of the analysis of fashion trends for the season "autumn-winter 2020-2021", the choice of a source of creativity, the development of a series of sketches of the collection, an artistic and technical description of the appearance of products, determining the most accurate and modern method of designing a suit, studying the properties of the materials used, making drawings basic and model designs of the project and the choice of processing technology for products. The studies have shown that the ergonomic approach improves consumer qualities of products and contributes to the adaptation of their imaginative solutions and designs for everyday use.

1. Introduction

In our opinion, the issue of using an ergonomic approach in the works of fashion designers, textile designers and costume designers is of paramount importance for modern design (Haider Ackermann, Stefano Pilati, Tom Ford, Simon Port Jacques, Greg Lauren, Raf Simons, Kim Jones, Hiroki Nakamura, Denis Shevechenko, Alisa Ushakova, Nino Shamatava and other costume designers). The development of collections of clothing and accessories for mass production should be carried out taking into account the capabilities and characteristics of potential consumers, contribute to the creation of comfort, a positive outlook and evoke many bright, positive emotions.

In this article, the design of a suit and accessories is considered as an innovative activity aimed at achieving a specific goal. This goal is formulated in the form of a project task, namely, the creation of relevant accessories for a promising youth collection that departs from the usual forms and meets four requirements: ergonomics, environmental friendliness, aesthetics and economy.

The significance of the ergonomic approach using in the designing process of transforming accessories in our study is determined by:

- the need for agreement between the requirements for the design project and the psychological and physiological characteristics of potential consumers;
- comprehension of the influence of human behaviour, activity and well-being on the formulation and solution of problems of design and production of a suit and accessories;
- integration of the requirements and characteristics of a person into a design project [1];
- the ability to analyze and structure the ongoing changes in human life, to highlight the main characteristics of the "man-suit-environment" system to create fundamentally new constructive volumetric solutions.
Organization of the productive work on the design project of the suit and accessories needs to consider this process in different aspects: conceptual approaches (O.I. Genisaretsky, G.V. Tolmacheva, M. Heidegger); psychological and physical approaches (V.M. Bekhterev, L.Ya. Dorfman); creative approaches (F. Barron, D. Feldman) scientific and technical approaches (St. Garner, T.O. Berdnik, O.I. Genisaretsky), artistic approaches (A.S. Kvasov, S.A. Mednik), systemic approaches (M. Chikszentmihalyi, D. Feldman) and ergonomic approaches (K. Marell, V. Yastrzhembovsky) [2 – 8]. The scientists mentioned above consider various aspects of the issue we are investigating, but do not offer ways to solve it.

A hypothesis of the study: the process of designing a suit and accessories will be more productive if an ergonomic approach is used as a methodological basis.

The following sections present methods of organizing the process of designing a suit and accessories and the results of their approbation at the Yelets State University named after I.A. Bunin.

2. Materials and methods
Following the hypothesis of the study and the degree of development of the problem, the following tasks were set:
1. to substantiate the productivity of the design of a suit and accessories-transformers from the standpoint of an ergonomic approach;
2. to develop a collection of suit models and transformer accessories from the standpoint of an ergonomic approach and following the fashion trends of the fall-winter 2020 / 2021 season;
3. to approve a methodology that contributes to the production design of a suit and transforming accessories from the standpoint of an ergonomic approach.

The tasks can be solved by organizing the process of designing a suit and accessories-transformers on a theoretical and methodological basis, and the effectiveness is checked using the selected criteria and indicators.

The study aims to determine the effectiveness of the ergonomic approach in the development of relevant forms of a suit and transforming accessories for young people.

Following the purpose of the study, the following tasks were solved:
- fashion trends in themes, colour palette, fabrics, trends and accessories in the fall-winter 2020 / 2021 season were analyzed,
- a source of creativity was selected (silhouette form, colour scheme, texture),
- a series of collection sketches were developed, artistic and technical description of the appearance of the products,
- the most accurate and modern method of designing a suit was determined,
- the properties of the materials used were studied,
- drawings of the basic and model designs of the project were made,
- the technology for processing the products was selected.

The questions of the influence of modern fashion on the formation of personality were also considered [9].

The choice of material influences the protective, aesthetic and utilitarian function of the suit, allowing for comfort and confidence.

For design project, the following materials were used: multi-textured artificial leather, raincoat fabric, denim, the knitted fabric of different texture and density, artificial suede, chiffon, lining fabric and dubliner (Figure 1). Modern technologies make it possible to improve materials, making them wear-resistant, durable, able to cope with low and high temperatures, hypoallergenic and safe for the human body. The materials used in the design project are pleasant to touch, have high wear resistance, strength, excellent breathability, and are easy to clean. The most ergonomic knitted fabrics "kashkorse", "footer", "noodles", "mesh" with an original weave of natural, artificial and (or) synthetic fibres. By their properties, they are antistatic, hygroscopic, hygienic and hypoallergenic.
In the development of the design project, the method of analysis, the method of associations, the combinatorial method of design, the method of transformation were used. The calculation and graphic methods of designing garments were considered (the Unified method of designing clothes of the countries of the members of the Council for Mutual Economic Assistance, the methodology of the Central Experimental and Technical Sewing Laboratory, the methodology of the Central Research Institute of the Garment Industry, the method "Mueller and Son" and the dummy method. Since not all systems and methods for designing garments take into account the deforming properties of fabrics and the class of deployment accuracy, a unified method of designing of Central Experimental and Technical Sewing Laboratory was chosen for the designed collection. This technique made it possible to unify calculations, detail and classify all allowances, simplify the graphic construction of individual nodes. Within the framework of the ergonomic approach, the technique allows working with an individual human figure, taking into account all the features of the physique, to accurately select increases for free fit, which guarantee an excellent fit. This technique is especially relevant when using modern computer-aided design of garments in the development of original design techniques, taking into account the new properties of modern materials.

3. Determining the effectiveness of an ergonomic approach in the development of actual forms of costume and accessories-transformers for young people

The continent of Antarctica, celebrating the 200th anniversary of its discovery by Russian seafarers F.F.Bellingshausen and M.P. Lazarev, served as the source of creativity for the development of a collection of costume and transformer accessories under the motto "Cold Desert".

According to the author's intention, the collection of models should reflect the beauty and purity of the nature of Antarctica, its global ecological significance. The idea is achieved through a colour scheme, the use of materials of different textures, and sophisticated structural modelling. Asymmetry and geometric articulations repeat the individuality and massiveness of the pointed peaks of rocks and glaciers. Moreover, the different texture of materials conveys the state of nature of the continent: the smoothness and fluidity of waters, fogs and ice sheets, natural relief.

Clothing that protects people in the harsh climate of Antarctica must meet all ergonomic criteria. This requirement also influenced the design project of the costume for young people. The ergonomic approach is the most effective in modern urban fashion design, which requires practicality and comfort in all areas of human activity.

An analysis of fashion trends for the fall-winter 2020-2021 season showed that a modern person chooses products that have a free silhouette that allows free movement, soft shapes to give calm and comfort, as well as a creative cut that brings some novelty and individuality. This style of clothing not only matches the urban environment but also complements it with its unusual shapes (Figure 2).
Figure 2. Key themes of the fall-winter 2020-2021 season: a. Global Heritage Sports, b. "Urban survival"

The creation of the collection provides for a systematic development of the source of creativity, namely, the nature of Antarctica, which, while transforming, preserves the general idea and systemic unity (Figure 3).

Figure 3. Transformation of the source of creativity and drawing up a sketch series: a. source of creativity, b, p. transformation of the source of creativity, d. sketch of the collection "Cold Desert" (author – O. Golikova, the student of Bunin Yelets State University)

The collection's peculiarity lies in its sophisticated constructive modelling (Figure 4). It includes a wide assortment range: trousers, skirts, sundresses, sweaters, blouses, parkas, coats, dresses, realizing the idea of an urban wardrobe for every day. The collection is created, taking into account the principle of interchangeability, which corresponds to the ergonomic approach to the suit design.
Numerous transformer accessories complement the collection: bags, glasses, hats, scarves. According to fashion trends in the fall-winter 2020 / 2021 season, bags are distinguished by functionalism, practicality, a variety of shapes and sizes. Whether it is tiny structured cases and micro bags, or padded backpacks and bags made from premium quilted nylon with a satin finish, functional, detachable pockets adorned with trendy detailing.

Stylish transformer bag (Figure 5) is the embodiment of design ideas from the standpoint of an ergonomic approach. This bag is a phenomenon that adapts to any life situation in a few seconds. The apparent advantage of the developed transforming bag is its versatility. A multifunctional accessory for a modern person is becoming a necessity. Depending on the needs of a person, a transforming bag can easily modify four main parameters: shape, dimensions, number of compartments and appearance. The most popular option is the transformation of shape and size. The oversized rectangular bag can be easily transformed into a bolero if folded in half and secured with fittings. A neat oval shape, the bag acquires after fastening the tape "zipper" on the sides.

The bag capacity can be increased by changing the number of pockets. Some models have detachable wallet pockets that can be used separately from the bag. Complete modification of the texture and colour of the bag occurs when it is turned inside out. Opening the zipper allows easily changing the design of the bag and use it as a sundress, skirt and even a sleeping bag. Detachable straps and hiding shoulder straps provide maximum comfort while moving. Another valuable advantage is saving money because instead of buying several things, we buy one that performs the functions of five or even more models.
Modifying the transforming bag makes it possible to experiment with Pearson image. Such a bag does not fit into the standard rules of wearing, so it can be ideally combined with many elements of the suit.

4. Conclusion
Design and compositional and design work was carried out to complete the design project of a suit and accessories-transformers for young people under the motto "Cold Desert". It was experimentally found that the ergonomic approach significantly increases the consumer qualities of products, allows them to adapt their imaginative solution and design for everyday use. A survey of potential consumers (girls 14-22 years old) after the demonstration of the collection showed that convenience, comfort and practicality in combination with aesthetic appeal were noted by 96% of respondents, modernity and quality of materials – 84% of respondents, originality of the created image – 80% of respondents. The design project can be implemented in small-scale industrial production.

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