



RESEARCHES ON THE FUNCTIONAL CLOTHES USAGE DESTINED FOR PERSONS WITH LIMB AMPUTATIONS

FLOREA-BURDUJA Elena^{1,3}, RARU Aliona^{2,3},
FARÎMA Daniela³, IROVAN Marcela¹

¹ Technical University of Moldova, Faculty of Textile and Polygraphy, 4 Sergiu Radautan Street, Chisinau MD-2019, Republic of Moldova

² Technical University of Moldova, Direction of Academic Management and Quality Assurance, 168 Stefan cel Mare Street, Chisinau MD-2004, Republic of Moldova

³ Gheorghe Asachi Technical University of Iasi, Faculty of Industrial Design and Business, 29 Mangeron Street, Iasi 700050, Romania

Corresponding author: Florea-Burduja Elena, E-mail: elena.florea@mctt.utm.md

Abstract: *Recently, the issue of designing special clothing for people with disabilities attracts the attention of specialists in various fields. This topic is very current, important and requires in-depth studies. The need for functional products for people with lower limb amputations is quite high, but they can only be found in specialized workshops. At the moment, local companies do not make clothing for people with special needs, which leads to a shortage of products on the market. The paper presents the results of a study that shows us the need for specialized products for people with lower limb amputations and their use in everyday life. The topicality of the theme is determined by the increase in the number of people with lower limb amputations and the increased interest of specialists in creating clothing for people with disabilities. The paper aims to establish the range of textile products for people with amputations of the lower limbs, necessary during the rehabilitation period and the period of social integration. The general objective of this paper is to analyze the assortment present in the wardrobe of people with amputations of the lower limbs and identify the need in product types. The paper presents the results of a survey of a group of prisoners with lower limb amputations. There is also a tendency to establish the group of clothing products, which would satisfy the wearer, but also those around.*

Key words: *functional clothing, people with lower limb amputations, assortment*

1. INTRODUCTION

Clothing can play a key role in safety and self-esteem. In the case of people with disabilities, clothing can also be an opportunity to reduce the effort to have a normal life.

People with physical disabilities, including people with amputated lower limbs, face a number of problems that do not allow them to have a normal life. One of the main problems they face is social integration. In order to integrate a person with a disability into social life, it is necessary to provide him with psychological comfort, which is largely not present due to self-distrust. This self-confidence depends a lot on the person's physical and psychological state and of



course on the way he looks [1,2].

Currently, with the increase in the number of limb amputations, the problem of rehabilitation and adaptation of patients is quite acute. According to modern statistics, the number of people who have suffered limb amputation is 10% of the total number of patients with musculoskeletal injuries.

In Republic of Moldova, according to the report of the National Center for Health Management, the number of amputations performed (without the Transnistrian region) is increasing. Thus, in 2003, 1090 amputations were performed, and in 2019 the number of amputation surgeries almost tripled, constituting 2728 cases [3].

2. THEORETICAL ASPECTS

Adaptive-functional clothing can be defined as special clothing, designed and developed to ensure the requirements of the wearer and ensure its ergonomic, functional and psychological comfort.

Adapting people with disabilities in society is complicated. Psychological factors cannot be denied here. They make the person feel confident and find their place in society. The role of adaptive-functional clothing is to form a rehabilitation effect, to provide increased comfort and to create a psychological balance.

For the design of adaptive-functional clothing products for people with lower limb amputations, it is necessary to perform a complex study in which the initial information about the wearer will be established, such as: wearer's characteristic for which clothing will be developed, disability characteristic, their way of life, the psycho-physiological and anthropo-morphological characteristics of the wearer, etc.

Of major importance is the movement of people with physical disabilities. The design of the products takes into account the characteristic of the disability and how much it affects the way of travel.

It is also necessary to research the types of clothing and accessories used by people with physical disabilities. They can provide a state of satisfaction and self-confidence, but are hard to find in the local market and are rarely used.

Environmental research is done in order to establish the positive and negative factors that influence the quality of life of people with physical disabilities. Attempts will be made to focus on the positive factors, and the negative factors will allow the formulation of quality requirements for adaptive-functional products.

3. PRACTICAL ASPECTS

Restraining the ability to move leaves a certain imprint on the lifestyle of a person with amputations of the lower limbs. They perform the same characteristic range of motion due to limited functional capacity.

The need for special clothing is of great importance in the lives of people with locomotor disabilities. It must meet aesthetic and ergonomic requirements, adapt to external environmental conditions, increase the quality of life, etc. [4].

People with locomotor disabilities cannot boast a rich assortment. As the results of the survey show, the wardrobe of people with lower limb amputations includes (Figure 1):

- - Men: shirt / t-shirt + pants (80%), shirt / t-shirt + aprons (20%);
- - Women: dress - 20%, blouse / t-shirt + pants (70%), blouse / t-shirt + skirt (10%).



The sets are completed with light exterior products that have a length no longer than the hip line, to provide comfort on the go.

If we analyze the answers offered, we notice that most wearers want to have comfortable clothes that would correspond to the disability they present and to have a beautiful and pleasant appearance. About 86.7% of respondents have positive opinions about the creation of special products, and the others do not consider it necessary to purchase a functional-adaptive product, because they consider that they are unexcused expenses.

The financial part is quite important in the purchase of special clothing, because about 73.3% of respondents do not work, 6.7% study and only 20% are employed. This explains the large number of sports products in the wearer's wardrobe.

Analyzing the way of purchasing special products for people with amputations of the lower limbs in the Republic of Moldova, we notice that the vast majority are forced to purchase products made on an industrial scale, which then modify them as needed. Only a small part can buy clothes online or make custom-made clothing products taking into account individual needs. This is strictly related to the low financial situation of the bearers.

The interviewees explained that they want to wear comfortable products (93.3%), beautiful and modern (60%) and of course quality (53.3%). Among the respondents' observations were also detected a series of non-compliant factors that can be observed in the clothing products they wear: high price (93.3%), inadequacy of the products to the type of disability (86.7%) and discomfort in behavior (66,7%).

Thus, taking into account the results obtained from the survey, it was proposed the range of necessary products used by people with amputations of the lower limbs during the period of adaptation and the period of social integration (Table 1).

Table 1. Assortment of textile products for people with lower limb amputations

Periods	Textile products	Product type
rehabilitation	clothing products	- underwear; - special clothing for patients with lower limb amputations (robe, gown, trouser, long-sleeve t-shirt, set for men and women (top and trouser)).
	auxiliary products	Bandages, compression stockings, liner.
integration	clothing products	- underwear; - outerwear (coats, jackets, trench coat – medium length); - intermediate (blouse, shirts, vests, sundresses, dress, pants, skirts, shorts, breeches – with special elements that will allow access to the amputated limb); - corsetry articles; - headgear and accessories.
	auxiliary products	Liner for prosthetic leg, stockings, tights.

3. CONCLUSIONS

Following the research, we can say that people with amputations of the lower limbs do not have a rich assortment of clothing products. They have to purchase industrially made products, which can then be modified as needed or adapted to them. It is observed that most of the products



belong to a group that seems to be intended for the elderly without taking into account the fashion trends and the age of the wearer. It is also observed that a large part of the products are unisex, ie designed for both women and men.

All this does not allow the wearer to present an attractive image that would ensure increased self-confidence and allow a faster inclusion in society. That is why it is necessary to develop a rational wardrobe both for the period of social integration and for the period of rehabilitation, which:

1. to provide a special design with functional elements that will allow the “erasure” of the difference between people with special needs and ordinary people and to ensure psychological comfort;
2. to be ergonomic, to meet the requirements of the “human-clothing-environment” system and to allow the fulfillment of all the processes present in life such as independent dressing / undressing, matching clothing in static, dynamic and other positions characteristic of disability;
3. to present a series of optimal solutions through the presence of various functional-constructive elements, which would allow access to some less accessible areas, modification of functional elements, placement / removal of product details, etc .;
4. to raise the quality of life by offering the opportunity to participate in various social events.

REFERENCES

[1] E., Florea-Burduja and A. Raru (2020, Apr.) Etapele de proiectare a produselor funcționale destinate persoanelor cu dizabilități. Conferința Tehnico-Științifică a Studenților, Masteranzilor și Doctoranzilor, 1-3 aprilie, 2020/ Univ. Tehn. A Moldovei. – Chișinău: Tehnica-UTM, 2020, ISBN 978-9975-45-632-6, ISBN 978-9975-45-634-0, [Online]. vol. 2, p. 380-383. Available: <http://repository.utm.md/handle/5014/8834>

[2] E., Florea-Burduja, A., Raru, M., Irovan, D., Farîma, A.. Tăbîrță (2020, Sept.). The role of clothing in various stages of assisting people with amputations (review). Annals of the University of Oradea a Fascicle of Textiles, Leatherwork, [Online]. 21(2), University of Oradea a Fascicle of Textiles, pp. 27-30. Available: <http://textile.webhost.uoradea.ro/Annals/Volumes.html>

[3] <http://www.cnaa.md/institutions/cnms/>

[4] F.; Nigmatova, Z., Igamberdieva, Sh., Kasymov, and M. Shomansurova, (2019) "PROBLEMS OF DESIGNING OF ADAPTABLE CLOTHES FOR PEOPLE WITH THE LIMITED IMPELLENT POSSIBILITIES," Textile Journal of Uzbekistan: Vol. 1 : No. 1 , Article 15.

[5] A. Raru, E. Florea-Burduja, M. Irovan, and D. Farîma (2020, Sept.). Clothing need for people with breast cancer disabilities (rewiew), Annals of the University of Oradea a Fascicle of Textiles, Leatherwork, [Online]. 21(2), University of Oradea a Fascicle of Textiles, pp. 73-76. Available: <http://textile.webhost.uoradea.ro/Annals/Volumes.html>