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CONSTRUCTIVE DEVELOPMENT - FUNCTIONAL CLOTHING FOR CHILDREN BORN PREMATURELY

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Abstract: *The design and development process of clothing products for premature babies includes a set of requirements for these types of functional products for this group of wearers. The clothing products intended for premature children must ensure the functionality of the product and the safety of the child who wears it, by respecting the dynamic effects transposed in the constructive additions, provided in the proposed design method. The addition system adopted in the developed design method meets the dynamic needs of premature babies. Designed clothing contributes to improving the condition of the premature baby in the incubator through functions adapted to the requirements and conditions imposed. These products can provide comfort and utility to everyone involved: parents, doctors and children. Therefore, the development of functional clothing for premature infants in intensive care ensures the maintenance of body temperature within normal limits and the comfort of children, and facilitates the necessary medical procedures. Research has shown that the design of new textile products for premature babies has an important role in development and growth.*

Key words: *design method, functional products, specific requirements, premature babies.*

1. INTRODUCTION

The new approach in designing clothing products for children, with flexible structure, is based on the following principles [1-4]:

• the principle of exchanging functional elements;
• the principle of universality of functional elements;
• the principle of multi-functionality of elements;
• the principle of transformation.

Thus, for the design and manufacture of functional clothing products for children born prematurely, the following aspects were taken into account:

- the study of the variability of the values of the anthropometric indicators;
- the study of the constructive parameters of the basic models, for the clothing products for premature babies, according to the dynamics of changes in the dimensional indicators, according to the degrees of prematurity;

- the study regarding the adoption of some compositional-constructive elements that lead to the extension of the life cycle of clothing products for children.

2. GENERAL INFORMATION

2.1 Body product design for premature babies

When designing the body clothing product for premature children, the dimensional characteristics (table 1) and the necessary additions (table 2) for the construction of the basic pattern were initially identified, after which the model pattern of the product was made according to the technical drawing.

Table 1. *Anthropometric characteristics for the design of the basic pattern of the body product for children born prematurely.*

Anthropometric characteristic	Calculation relationship	Value, cm
Product length (Lp)	Lp = 0,5 * Lc + 5 cm 0,5*44+5 = 27	27
Body length (Lc)	Lcorp = 44 cm	44
Half Chest Circumference (Chest Circumference/2)	32,6/2 = 16,3	16,3
Back length to waist (Lst)	Lst = 0,25*Lc +A A = 5 cm 44*0,25+5 = 16 cm or Lst+5=11,61+5 = 16,61	16,61
Sleeve cut depth (Arm)	Arm = 0,5*Lst-2cm = 11,61*0,5+1 = 6.80 cm	6,80
Sleeve cut width(lrm)	lrm = 0,25*(St+A) = 0,25*(16,3+2)=4,57 cm A = 2 cm	4,57
Back width (ls)	((ls*0,5+A = 14,84*0,5 = 9,42	9,42
Face width (ls)	ls	9,42
Seat height(St)	0,5*St + A=8,2+1 = 9,2	9,2
Shoulder length (Lm)	0,3*Lm = 0,3*14,92=4,47 cm	4,47
Sleeve length	14,92 cm	14,92
Neck semiperimeter (Pg)	Pg*0,5 = 19,11*0,5 = 9,55	9,55

Table 2. *The additions used to design the basic pattern of the body product for babies born prematurely*

Additions	Value, cm
Back Length Addition to Waist (ALst)	5
Additional seat height (AÎș)	1
Product width addition (Al.p.)	4
Back Neck Cut Width Addition (Args)	1
Back neck cut depth (Args)	1
Front neck cut width addition (Argf)	1
Front neck cut depth (Argf)	2
Sleeve Cut Depth (Arm)	1

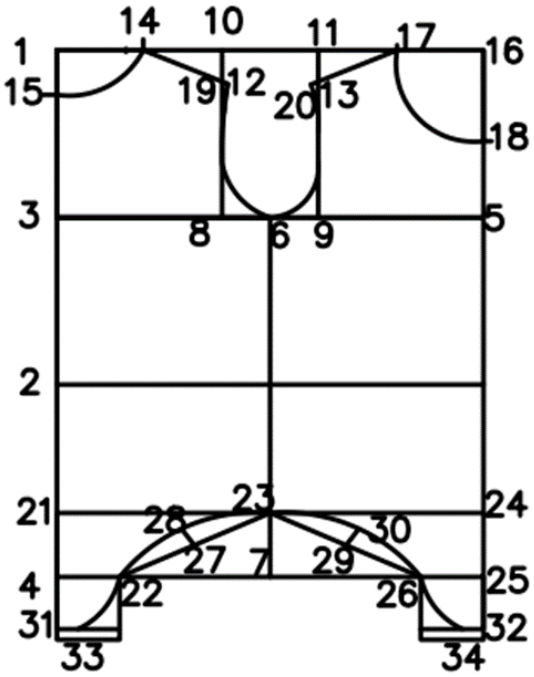

Fig. 1. *Basic bodysuit pattern for premature babies*

The development of the basic pattern was also carried out in the automated design system "JULIVI", Ukraine. "JULIVI" is a complex of 2D and 3D programs for designing and modeling clothes of various sizes and styles. The "JULIVI" system includes the "Design" program, which allows the design of the basic pattern using any method (Müller, Unified method of clothing design of the Council for Mutual Economic Assistance – UMCD CMEA) etc.

The steps taken to design the clothing products were as follows:

1) drawing up the model draft analyzing the requirements imposed on this category of carriers
2) development of the model pattern;
3) obtaining the final outline of the product;
4) development of the product prototype;
5) testing the prototype in specialized medical centers;
6) development of the final model constructions applying the recommendations of neonatologists from the medical centers of the care wards for premature babies [5-6].

The clothing products are intended for premature babies in the prematurity group with a body weight between 1500-2000 g, who are in the neonatal intensive care unit and require adapted clothing products. Medical specialists who participated in the study said that the use of these clothing products in the intensive care unit is welcome, as it will actually facilitate their work, due to easy access to medical equipment.

5. CONCLUSIONS

The design of functional clothing ranges for children aims to meet the specific requirements of this category of wearers and of the team of specialists who are directly involved in the medical procedures to which these children are subjected. In order to obtain suitable products,

anthropometric data, children's degree of development and advanced methods of designing products with shoulder and waist support will be taken into account.

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