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## **ANALYSIS OF THE POSITIVE EXPERIENCES IN ADAPTIVE CLOTHING DESIGN BY THE WORLD'S LEADING MANUFACTURERS**

*The aim of the research* is to study the positive experiences of the world's leading adaptive clothing manufacturers, the ergonomic and aesthetic principles in its design.

*Keywords:* adaptive clothing, inclusivity in clothing design, adaptive clothing for people with disabilities.

*Problem statement:* In recent years, increasing attention towards community and social environment inclusivity has been a significant achievement. People who have suffered severe injuries, illnesses, as well as individuals with disabilities should not feel as though they have limited opportunities. Moreover, this is unacceptable in medical and rehabilitation fields. A wide range of assistive devices and structures for that purpose is already being devised and utilized. Clothing also has to play a crucial role, as it is an integral part of individuals' everyday lives, work, sports and other activities. Adaptive clothing is essential for those undergoing complex multi-stage and prolonged treatment or rehabilitation. It enables them to live a fulfilling life even with consequences of injuries, wounds, or disabilities. Adaptive clothing must meet both utilitarian and aesthetic requirements, be versatile and ergonomic, while accommodating all specific needs and additional requirements.

*Methods.* The literary-analytical method was used to conduct this research, as well as to systematize and summarize academic literary sources and scholarly Internet resources.

*Findings.* Conceptually, adaptive clothing results from modification (customization) in the clothing design process to meet the needs of people with disabilities (PWDs). Although adaptive clothing has been available on the market for decades now (for example, brands such as Silverts and Buck & Buck), its design has long reflected medical concepts in the adaptive wear design.

On the inclusive clothing market, developers and designers have traditionally neglected fashion preferences of customers with disabilities, instead favouring functional and practical aspects. The main emphasis has been placed on the needs of caregivers or medical professionals, who assist PWDs in getting dressed.

In the mid-1990s, social model of disability was introduced (SMD), which changed the approach to this issue. The model asserts that it is the environment that creates barriers for people with disabilities, rather than the disability itself. If these barriers in infrastructure, products and services are eliminated, then it will be possible to create a society where all individuals are equally supported, including those with disabilities.

The social model was widely accepted by the community of people with disabilities, as well as by the UN, which included it in the Convention on the Rights of Persons with Disabilities (CRPD). This treaty protects the rights of PWDs and urges the elimination of discrimination through initiatives that ensure full social integration of these individuals.

Amongst the pioneers of mass fashionable adaptive clothing production companies, the following world-renowned companies can be distinguished: Tommy Adaptive, established in 2016, is the first fashion label to launch a full-fledged adaptive clothing collection on the market (USA, specializing in creating clothing for wounded soldiers, producing individual custom solutions); IZ Adaptive, launched in 2009, which introduced special magnetic closures and a cut of clothing that perfectly suits those staying in a seated position (Canada, providing solutions for wounded soldiers and people with physical disabilities who use wheelchairs, as well as for lower-extremity injuries); Rolli-Moden (Germany, providing solutions for rehabilitation); Adaptive Clothing Works (USA, offering sportswear for people with amputated limbs, including military personnel); Nike FlyEase, which became the first large sportswear company to design a footwear line for people with disabilities, utilizing step-in technology (eliminating the need for shoelaces), and adjustable straps (USA, 2015); Care+Wear (USA, focusing on adaptive clothing for healthcare facility patients, especially comfortable medical attire for individuals undergoing treatment).

Therefore, there is a certain niche specialization among adaptive clothing manufacturers, but most of them incorporate key innovations. Primarily, this involves the use of so-called “smart” textiles and warp-knit fabric that can provide temperature regulation, wick moisture, are antimicrobial and can be stretched in certain directions to provide comfort of movement, or conversely, to maintain shape, or to create a protective shell. The use of modular transformer designs allows for changes in the shape and functionality of clothing items depending on needs. Fast and easy access and fastening of individual sections are facilitated by Velcro straps, magnetic closures, zippers.

Tommy Hilfiger, one of the world’s most popular fashion clothing manufacturers, launched an adaptive clothing line known as Tommy Adaptive in 2016 in cooperation with Mindy Scheier, initially introducing 22 clothing items for children with disabilities. This

initiative aimed to address the lack of stylish and accessible clothing for this specific group of customers.

Eventually, in 2017, Tommy Adaptive expanded its product range by including adult clothing in the collection, while preserving the label's traditional American style and introducing new innovative elements, such as magnetic closures, stretch fabrics, and adjustable straps, which make dressing easier for people with different physical needs.

In 2018, the brand increased the number of Tommy Adaptive lines to two per year and expanded their accessibility on an international level, including Europe, Australia and Japan. This step highlighted the growing demand for adaptive clothing and the label's pursuit of meeting the needs of the global community of individuals with disabilities.

In 2023, Harvard Business Review published a podcast dedicated to Tommy Hilfiger adaptive clothing line, discussing the challenges and opportunities arising from the introduction of this inclusive initiative.

Among the main requirements for adaptive clothing, the following should be highlighted:

*Functionality*, particularly simplified access to dressing and undressing due to its design and the fastenings that can be operated with one hand and minimal effort (magnetic closures, textile Velcro straps or snap buttons with a soft fastening mechanism), and a design thoughtfully created to simplify clothing maintenance (washing, ironing).

*Ergonomics*, which should take into account the physiological characteristics of injured individuals or people with a specific type of disability, as well as the specifics of the care or treatment process.

*Hygiene*, which involves the use of materials and technological processes that do not irritate the skin or affected body regions, and possess hypoallergenic properties, among others.

*Versatility*, which involves the use of modular transformable designs, unisex clothing models, etc., and the application of high-stretch fabrics, avoiding stiff elements unless necessary for stabilizing or protecting injured body parts. Today, versatility in clothing design is a very up-to-date approach that reduces the need to accumulate various items in individual's wardrobe. One of the solutions is the use of layering in clothing design, which allows for different combinations of layers to serve different purposes. The look transformation can vary from a sporty style to business casual or even ceremonial attire.

Various requirements are outlined, considering different types of disabilities.

For wheelchair users the emphasis is places on an extended back rest and shortened front part for comfort, with minimal fabric used in the hip area to prevent excessive creasing and formation of extra folds. Additional padding is used in friction areas (back, thighs).

For people with mobility impairments, easily accessible snaps in key areas (front, side) are widely used, as well as sleeves and trouser legs that can be opened along their entire length, elastic waistbands instead of regular buttons or zippers, magnetic closures, Velcro straps, etc.

For people with specific sensory needs the design includes the absence of sewn-on labels, minimal amount of seams to avoid unnecessary discomfort from stitching, placing seams on less-sensitive areas and minimizing noise from fabrics or fasteners.

As additional aspects of adaptive clothing manufacturing, it can be outlined that the packaging should be environmentally friendly and easy to unpack, the clothing manuals should be comprehensible (with illustrations or pictograms), and the maintenance requirements should be as simple and accessible as possible.

All these requirements must be adapted to specific customer categories and regional standards, including cultural considerations.

The production of adaptive clothing and clothing for people with disabilities is regulated by a number of international standards and normative documents aimed at ensuring quality, safety and inclusivity of the products.

*Conclusion:* Adaptive clothing represents an important aspect of design development within the fashion industry. Despite growing interest in that topic since 2016, there are still significant challenges that require further research. Inclusive design can influence social integration of people with disabilities and enhance their access to stylish and comfortable clothing. Even though adaptive clothing has existed since the early 20th century in the form of medical garments, it was only during the last decades, through the efforts of designers such as Izzy Camilleri and large companies like Tommy Hilfiger and Nike, that this market has become fashionable, inclusive and accessible to a wider audience.

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