



 Research Article

THE RESEARCH ON THE PRODUCTION OF SPECIAL CLOTHES FOR CAR REPAIRMEN, TAKING INTO ACCOUNT THE ERGONOMIC FEATURES OF A PERSON

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ABSTRACT

The main purpose of work clothes is to reliably protect the human body from various production factors while maintaining a normal functional condition and ability to work. Work clothes should not restrict the movement of the worker during the work process and should meet the needs that arise when used in accordance with the purpose, as well as be comfortable. Convenience affects not only the well-being of the employee but also his or her ability to work efficiently. These articles are devoted to the solution of designing special clothing for car repair workers, taking into account the ergonomic characteristics of men, and analysing the results of research for the design of special clothing.

KEYWORDS

Special clothing, factors of production, construction, dimensions, body size values.

INTRODUCTION

Each ergonomic study begins with an analysis of the worker's activities and the function of the equipment. The goal of ergonomic research is to ensure the safe operation of the worker and the efficiency of the process. The results of the obtained research and object assessment are used in the development of recommendations, operational recommendations, and guidelines for occupational safety [1-3].

Special clothing is one of the personal protective equipment of workers, designed to protect them from the effects of various harmful production factors in production, forming special complex requirements for special clothing. Accordingly, to ensure labour safety; protection from harmful production factors; maintain the employee's normal functional status and ability to work during working hours; should not show irritating effects on the human body during operation. Special clothing should be selected taking into account the height and size of a particular worker and, similarly, should be able to meet the specific characteristics and conditions of the work performed and ensure occupational safety in the workplace. The urgency of designing special clothing is to determine the "address" of the product produced at the enterprise and to meet the needs of workers for special clothing. This involves the design and implementation of special clothing in the context of mass production, based on the requirements of a specific typological group of the population, including the individualization of processes,

taking into account the characteristics of individual consumers [4-7]. In mass production, the creation of special clothing in accordance with the figure ensures the safety of workers in working conditions, efficient use of working time and ease of movement. When designing special clothing, it is necessary to ensure its ease of use, taking into account the body postures and movements performed by the user, and knowing the dimensional characteristics of the human body when designing clothing. Dimensions are determined by a series of measurements of the human body. It is possible to produce clothes that fit the shape and size of the human body only if you have information about the specific dimensions of the human body and the dimensions between different groups of the population [8-11].

MATERIALS AND METHODS

Special clothing must meet the complex requirements of a protective, hygienic, operational and aesthetic nature. At the same time, it is necessary to maintain the normal functional state and working capacity of the person during working hours. Therefore, the design of special clothing based on its anthropometric dimensions, taking into account the human figure, is a topical issue. The work on creating a size typology in garment manufacturing begins with selecting the size indicators needed to design the garment. In this case, it is important to determine the age,



nationality, profession and place of measurement. In addition, according to the results of the study, the following types of movements were identified - body forward, arm movement -51%, body sideways -34%, arms raised -54%, lumbar rotation -73.5%, knee joint movement -39 % [5].

The study aims to design reasonable garments that are distinguished by their functional properties in certain topographic zones and provide a certain level of product quality and form reasonable types of production of new special garments for workers in manufacturing enterprises.

RESULTS AND DISCUSSION

According to the six height numbers adopted for the frame, the height measurements corresponding to the interval limit were separated. As can be seen from the table, 36% of the workers and employees were men with a height range of -174-179 cm. The shortest heights were 2% of males in the range of 156–161 cm. The tallest men, 186-188 cm, accounted

for 3%. According to the study, 30% of workers and employees are men with a breast circumference of 100 cm and 25% are men with a breast circumference of 96 cm, 1% have a breast circumference of 80 cm, and 3% have a breast circumference of 108 cm. size. In men, the waist circumference ensures a good fit of the garment. The results of many measurements show that the value of the waist circumference varies significantly, taking into account the abdominal outflow when the chest circumference does not change. These dimensions are of great importance in the design of clothing, as the waist circumference, which takes into account the abdomen, reflects the age-related changes in the body of the population.

It is known that the value of the waist circumference determines whether a man's typical figure belongs to a certain fullness group. With this in mind, the completeness group of the respondents was analyzed. The results of the analysis are shown in Figure 1.

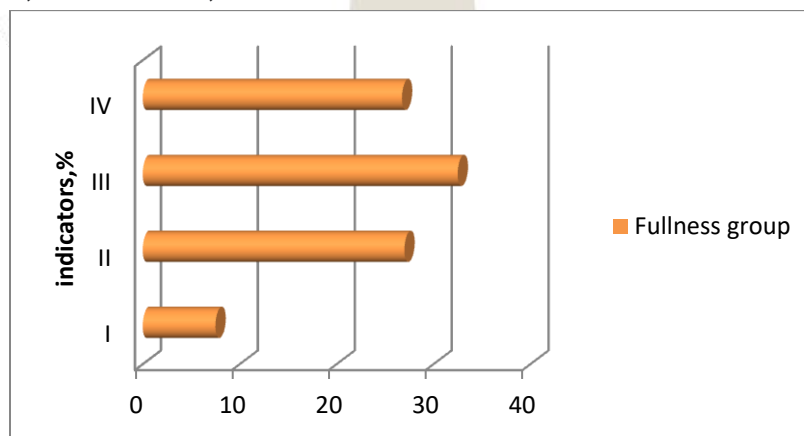




Figure 1. Distribution of male stature by the whole group

From the results, it can be concluded that out of 400 respondents, 7.5% belong to group I, 27% to group II, 32.5% to group III, 26.75% to group IV and 6.25% to group V. The result of comparing the differences between the full quantities of the measurement marks was that the amount of

these differences between the 100-108 size groups was less than that of the 80-96 size groups [12-15]. Thus, it can be observed that the degree of completeness has little effect on the increase in the measurement marks as the body size increases.

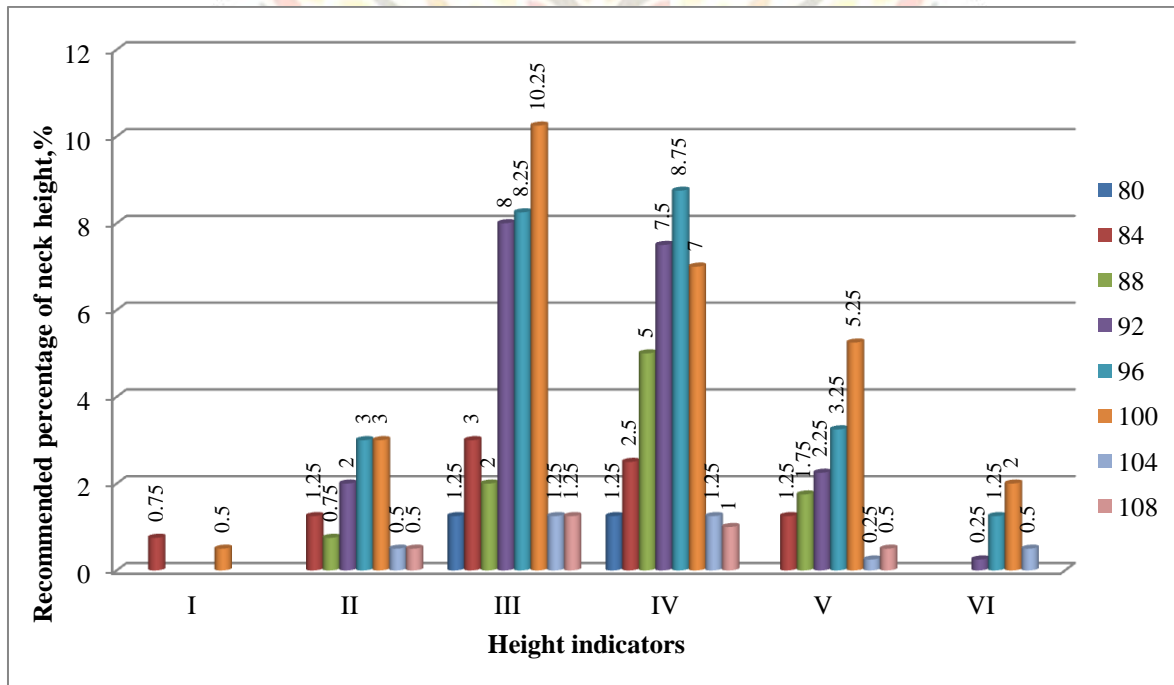


Figure 2. Distribution of measurement values according to the results of anthropometric research

The distribution of size and height values according to the size values of the male body was constructed (Fig. 2), the diagram shows the percentage of size and height matching, the purpose of which is to determine how many sizes and heights are most common in men aged 30 to 40 years. Taking into account the above

results, it is recommended to develop a design of special clothing for car repair workers in sizes III and IV, sizes 92-96-100. When designing men's special clothing, it should be borne in mind that III and IV heights 92-96-100 are intended for mass production only in accordance with the standard sizes. Taking into account

anthropometric dimensions, it is necessary to study the following key issues in the design of special clothing for construction, food and automotive industries and employees:

1) duration, intensity and recurrence of exposure to hazardous and harmful production factors;

2) basic physical conditions and actions of the worker when performing technological process operations. The study of the characteristic body conditions of the worker influences the choice of constructive additions in clothing and, accordingly, the specific form of clothing [3-5]. Taking into account the above, the task was to analyze the methodology to recommend a rational design option, taking into account the functional and ergonomic requirements of man in the design of special clothing for industrial workers and employees. It should be noted that ensuring the parametric and dynamic compatibility of clothing design under operating conditions is one of the key factors in the design of special clothing for workers in all industries.

CONCLUSION

The results of the study show that as a result of the ergonomic movements of workers, their special clothing should be comfortable, not interfere with the movement of the worker, and not cause sweating of the worker, while not adversely affecting production efficiency. The task of analyzing the methodology to recommend a rational design option, taking into account the functional and ergonomic

requirements of man in the design of special clothing for car repair workers.

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