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CLOTHING BIOPHYSICS IN PERSONAL PROTECTIVE EQUIPMENT USE

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Aims and objectives. The aim is to evaluate personal protective equipment (PPE), estimation of load on the body the initial stages of the development process, optimization process of experimental research exemplary. The objective is to evaluate personal protective equipment through research in controlled laboratory conditions, with considering specialization and seasonality.

The object and purpose of the study. The object of the research is the processing establishment of laws by studying the physical changes in the body, and the effect of physical factors on the body. The subject of the study is personal protective equipment.

Methods and tools. The study is based on theoretical and experimental methods of determining the effect of biophysical factors.

Scientific novelty. There is a proposal to conduct the evaluation load the initial stages of the development process, which will enable to reduce the chance to the body, set temperature and pressure on the human body, as a result, there is a possibility of physical exhaustion. For the avoid undue loads the need for comprehensive evaluation of PPE with biophysical assessment key role, the establishment of laws by studying the physical phenomena in the body, and the impact of physical factors on the body.

Practical meaning. Personal protection designed to reduce the likelihood of injury to personnel where technical and administrative controls is not inexpedient or are not effective in the case of risks. The any security feature creates additional loading and increases the level of discomfort, some of them have quite a lot of weight, which creates an additional heat load per person.

The studies were not carried out in the direction of the functional state of the organism, which is characterized by varying degrees of intensity basic physiological functions by analyzing costs time, effort and energy to overcome the resistance of PPE that determines its performance.

Evaluation of the load in the early stages of the development process will enable to reduce the risk to the body established temperature and pressure on the human body, the result of which there is the likelihood of physical exhaustion. To avoid undue stress advisable to carry out a comprehensive assessment of personal protective equipment, which begins with a biophysical evaluation, by examining patterns of physical phenomena in the body, and the impact of physical factors on the body.

Personal protection is assessed by studies under controlled laboratory conditions that correspond to actual conditions in which they will use.

Research results. The results make it possible to avoid excessive loads while performing their tasks. A significant number of factors that affect the body causing discomfort estimated assessed through a questionnaire, the results of which have high precision, No registration zonal parameter values supporting results of the questionnaire, leading to inconsistency during changes in experimental samples, and gives the way to manipulate test results during research wearing. Through research, it is possible to avoid the wearing of research that will speed up the process of designing new personal protective equipment.

Biophysical inputs include the clothing ensemble's total thermal resistance in units of clo, and the ratio of vapor permeability, to thermal resistance, expressed as im/clo, or maximal evaporative potential, each measured at 1 m/s. Also needed as inputs are wind velocity coefficients for IT and for evaporative potential. These coefficients are typically determined by conducting biophysical assessments for IT and at multiple wind speeds [1].

Information for each evaluation is used as recommendations for products that are projected.

The comprehensive evaluation based on biophysical systems approach will allow optimal use of the budget due to reduced development time, is wearing stage research through the use of microprocessor devices, applications hardware design and retention of data discovery of defects in real time [2].

It is important that the theoretical development of integrated analysis means actually is key to solving another important problem connected with the creation of technology monitoring parameters livelihoods. This problem is extremely topical for quick and comprehensive analysis of the effectiveness of the tactical tasks by monitoring the physical reactions to stress on various parameters, body temperature, heart rate, respiratory rate, skin conductivity.

Conclusions. The use of complex biophysical evaluation will allow the experimental to minimize wear and minimize the levels of discomfort during PPE usage.

Keywords. physiology, biophysical assessment, personal protective equipment

LITERATURE

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