



THE INNOVATIONS IN ERGONOMICS OF OFFICE AND INDUSTRIAL WORKERS THROUGH AI

Introduction. WRMSDs are the most common workplace health hazards in the Baltic states and elsewhere. New type of textile treatments, like digital printing technologies using computers, are developing. AIWM (artificial intelligence worker management) systems in the workplace can provide potential opportunities to improve ergonomics as they can be used to improve workplaces' hazards monitoring. Worth to mention that nowadays main textile manufacturing is developed in the Asian countries. Hence the aim of the paper is to compile initial data for artificial intelligence (AI) model for implementation to workers of offices and garment industry.

Methods. 240 Estonian computer workers were investigated during 2020-2022 based on questionnaire KIVA. Pain questionnaires data of 505 Estonian office and industry workers, to describe the employees' most painful body regions because of non-ergonomic conditions at workplaces, the possibilities of improving the situation, and to give the knowledge for the prevention of and rehabilitation from MSDs to the workers is given.

Results. The initial data were gathered from scientific literature over the world, including Estonia and Latvia. The paper includes models for describing climate conditions in workplaces, for work-related musculoskeletal disorders (WRMSDs), the opinion of the workers on the working conditions and their health disorders connected with work. The compiling process of AI model for garment industry consists of the following parts: 1. The initial data for AI model: previous studies; 2. The model for considering the working conditions; 3. The model for considering the musculoskeletal disorders; 4. AI- model (as to be developed by info-technology specialists); 5. Recommendations for better ergonomics on workplaces. The comparison of three groups of workers (office, garment workers and patients with occupational diseases) MSDs development is given.

At the end of the research the recommendations for managing of workplace ergonomics are given that are similar as created by the AI model.

Conclusions. The stages for developing the AI model are next: clearing the operating factors (physical, chemical, psychological, ergonomic) → Influence on Organ systems (nervous system, → Considering the seriousness of the health disturbance (Functional stages I, II, III) → Occupational disease → Loss of working capacity → Preventive actions. The model for considering the connections between the neck, shoulder, elbow, wrist, back and pain duration and the stages of disease, pain duration and age, pain duration and groups of occupation is given based on interviews. From the working conditions the most disturbed the workers is air temperature, the lighting means, also noise and vibration.

Keywords: ergonomics, office and garment workers, artificial intelligence

Primary author: Prof. TINT, Piia (Tallinn University of Technology)

Co-authors: Dr TRAUMANN, Ada (TTK University of Applied Sciences); Dr TUULIK, Viuu (Tallinn University of Technology)

Presenter: Prof. TINT, Piia (Tallinn University of Technology)

Session Classification: HFE, IE

Track Classification: Programma: Programma