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Guest Editorial

Environmental Ergonomics

Despite sometimes extreme workload for the employees, at present investigations into the effects of the physical working environment on strain of the human being became rather rare in ergonomics journals. Therefore, extended versions of 6 selected papers dealing with *Environmental Ergonomics* which have been presented at the 2nd International Conference on Applied Human Factors and Ergonomics in July 2008 are published in this special issue. This Conference held in Las Vegas provided an international forum for the dissemination and exchange of scientific information on both theoretical and applied areas of ergonomics including also topics which meanwhile seem to become less attractive for research in the wide field of production and micro-ergonomics than cognitive and macro-ergonomics.

The special issue starts with two papers dealing with physiological responses to highly demanding physical activities during working in the extreme cold. Manual order-picking in deep-cold storage depots becomes more and more important due to increasing production and distribution of frozen food. Since these tasks under a climatic environment of $-24\,^{\circ}\mathrm{C}$ from technical reasons cannot be taken over from robots, the responses of physical strain parameters such as heart rate and work pulses, as well as core and skin temperature associated with working in the deep cold are of high interest. From a work-physiological point of view, there are at least some doubts, whether employees in an advanced age are capable to tolerate the high physical demands combined with such an extreme cold exposure at a provisionally established work-rest scheme in the same way as younger employees are able to do.

Therefore, both papers of Penzkofer et al. and Kluth et al. address also hypothetically expected age-related effects. Furthermore, the studies carried out as a controlled field study comprised also identical order-picking in a reference climatic environment of $+3\,^{\circ}\mathrm{C}$ in a chill room.

The paper of Schneider et al. represents a contribution to improving industrial visual testing and inspection workplaces. Comprehensive laboratory studies with varying inclination angles of test objects under different illumination scenarios led to the conclusion that for an optimal illumination it is not sufficient to just increase the general illumination level. Rather, attention must be paid to an integrated view, considering the surface type of the objects, the kind of lighting, and the geometric arrangement between light sources and the object to be inspected.

Heat stress associated mainly with mining became less frequent in the last decades in industrialized countries but still occurs very often in third world countries. Since it will never disappear completely even in high-technology workplaces, and because ergonomics primarily has to take care of occupational safety and health (OSH) at workplaces with extreme workload rather than OSH at outset endurable working conditions, three papers address the issues of heat stress, protection clothing and long-term adaptation.

The paper of Kampmann et al. is devoted to elaborate the variability of heart rate and core body temperature responses to repeated training and operation of mine rescue brigades men which are considered as typical for missions of firemen in a coal mine.

The article of Bröde et al. addresses heat acclimation as an adaptive response of the body to repeatedly occurring heat stress, and its relation to resting core temperature and heart rate.

The contribution of Gebhardt et al. focuses on calculations of cooling phases in warm and hot environments using a meanwhile well established and evaluated model.

Guest Editors

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