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Daniel Podgórski. *The Use of Tacit Knowledge in Occupational Safety and Health Management Systems*. S. 283–310.

A systematic approach to occupational safety and health (OSH) management and concepts of knowledge management (KM) have developed independently since the 1990s. Most KM models assume a division of knowledge into explicit and tacit. The role of tacit knowledge is stressed as necessary for higher performance in an enterprise. This article reviews literature on KM applications in OSH. Next, 10 sections of an OSH management system (OSH MS) are identified, in which creating and transferring tacit knowledge contributes significantly to prevention of occupational injuries and diseases. The roles of tacit knowledge in OSH MS are contrasted with those of explicit knowledge, but a lack of a model that would describe this process holistically is pointed out. Finally, examples of methods and tools supporting the use of KM in OSH MS are presented and topics of future research aimed at enhancing KM applications in OSH MS are proposed.

Kurt Wahlstedt, Dan Norbäck, Gunilla Wieslander, Leni Skoglund, Roma Runeson. *Psychosocial and Ergonomic Factors, and Their Relation to Musculoskeletal Complaints in the Swedish Workforce*. S. 311–321.

A random sample of 1 000 subjects (20–65 years old) from the national population of Sweden received a questionnaire; 70% (n = 695) replied, of whom 532 were occupationally active. Female gender, working with neck and/or body bent forward, arms above shoulders, and precision work tasks were predictors of musculoskeletal symptoms. Neck, shoulder, and upper back symptoms were more common in a strained situation at work (high demands, low control) (adjusted odds ratios [adjOR] 2.76, 2.80, and 2.26, respectively). Among females, neck and shoulder symptoms were more common in an iso-strain situation (high demands, low control and low social support) (adjOR 4.43 and 3.69, respectively), and low back symptoms were more common at low social support combined with a passive work situation (adjOR 3.35). No associations were found between iso-strain model and symptoms among males. In conclusion, iso-strain work situation was associated with neck symptoms among females, even when controlling for ergonomic factors.

Simo Salminen, Antti Saloniemi. *Fixed-Term Work and Violence at Work*. S. 323–328.

Objectives. This study investigated the effect of a fixed-term job contract on encounters of violence at work. We assumed that fixed-term employees encountered more violence or threats of violence at their work than permanent employees. **Methods.** This study is based on 3 large statistical data sets: (a) the Work and Health surveys carried out by the Finnish Institute of Occupational Health in 1997–2006 (n = 7 519); (b) the socalled Victim study carried out by Statistics Finland in 2006, where 4 088 working people were interviewed about victimization resulting in injuries and violence; and (c) another study from Statistics Finland, which interviewed 4 392 wage-earners about their working conditions in 2008. **Results.** One of the 3 data sets showed that fixed-term employees encountered more violence at work than permanent employees, whereas the other 2 did not show any difference between different contract groups. **Conclusions.** Our hypothesis concerning greater violence encounters among fixed-term employees was not confirmed.

Janne Sinisammal, Petri Saaranen. *Preferred Handrail Height for Spiral Stairs : a Fitting Trial Study*. S. 329–335.

Stairways are, in general, a thoroughly studied subject, but there is almost no scientific data available about spiral stairs. They are, however, widely used in homes, industrial sites and public buildings. The purpose of this study was to determine preferred handrail heights for a spiral stairway. The most preferred handrail height for descent was 105 cm. On the other hand, 95% of the participants regarded handrail heights between 95 and 100 cm satisfactory for descending. Participants' anthropometric data was combined with the handrail height preference to develop a draft of a model to predict preferred handrail height for other user populations.

Marzena Malińska, Joanna Bugajska. *The Influence of Occupational and Non-Occupational Factors on the Prevalence of Musculoskeletal Complaints in Users of Portable Computers*. S. 337-343.

Introduction. Portable computers are becoming an increasingly common main work tool; however, they are not properly adapted to the workstation. Musculoskeletal complaints are a very frequent complaint reported by workers who use computers in their work. **Aim.** The aim of the study was to assess the prevalence and intensity of pain in the musculoskeletal system in workers who regularly use a portable computer in their work and to determine the influence of working conditions and duration of work with a portable computer. **Material and methods.** The study covered 300 workers. Musculoskeletal complaints were assessed with the Nordic musculoskeletal questionnaire complemented with a visual analogue scale. Working conditions was assessed with a questionnaire developed as part of the study. **Results and conclusions.** The most prevalent faults in the organization of workstations were lack of a computer desk with an adjustable keyboard tray/drawer, no adjustment of chair armrests and no possibility to use an additional keyboard. The most frequent complaints among computer operators were headaches, low-back pain and neck pain. The use of an additional keyboard reduced the intensity of shoulder pain.

Wong Saw Bin, Stanley Richardson, Paul H.P. Yeow. *An Ergonomics Study of a Semiconductors Factory in an IDC for Improvement in Occupational Health and Safety*. S. 345–356.

The study aimed to conduct an ergonomic intervention on a conventional line (CL) in a semiconductor factory in Malaysia, an industrially developing country (IDC), to improve workers' occupational health and safety (OHS). Low-cost and simple (LCS) ergonomics methods were used (suitable for IDCs), e.g., subjective assessment, direct observation, use of archival data and assessment of noise. It was found that workers were facing noise irritation, neck and back pains and headache in the various processes in the CL.

LCS ergonomic interventions to rectify the problems included installing noise insulating covers, providing earplugs, installing elevated platforms, slanting visual display terminals and installing extra exhaust fans. The interventions cost less than 3 000 USD but they significantly improved workers' OHS, which directly correlated with an improvement in working conditions and job satisfaction. The findings are useful in solving OHS problems in electronics industries in IDCs as they share similar manufacturing processes, problems and limitations.

Karol Bednarek. *Electromagnetic Action of Heavy-Current Equipment Operating With Power Frequency*. S. 357–368.

The paper presents an analysis of the effect of magnetic fields of power frequency generated by heavy-current electric equipment on the environment. The results of computation and measurements of the magnetic field in the vicinity of power busducts are included. Possible hazards are considered that result from the effects of the magnetic field on workers present in the vicinity of busducts as well as secondary hazards caused by the degrading effect of the magnetic field on ferromagnetic structural materials (in reinforced concrete structures). Attention is given to an ergonomic aspect of interaction of the magnetic field with cathode ray tube computer monitors (annoying oscillation of the image).

Guenter F. Mueller, Marc Hassenzahl. *Sitting Comfort of Ergonomic Office Chairs—Developed Versus Intuitive Evaluation*. S. 369–374.

The sitting comfort of office chairs with different ergonomic layouts (inferior, superior) was examined. Fifty participants were randomly assigned to a 2 × 5 factorial experimental design with 2 different conditions of ergonomic chair layout (inferior or superior) and 5 different conditions of instruction to explore the chair. Four conditions were created to differentiate between various levels of perceptual awareness and processing of chair-related information (guided exploration and developed evaluation). In a 5th condition, participants remained uninstructed (free exploration and intuitive exploration). Under guided exploration, the participants' perception of sitting comfort was in line with objective differences in the chair layout. Different conditions of guided exploration, however, did not influence the evaluations. Under free exploration, the participants' perceptions did not match the ergonomic chair layout. In contrast to participants under guided exploration, they even rated the ergonomically inferior office chair more favourably than the ergonomically superior chair.

Bo Johansson. *Work Environment and Production Development in Swedish Manufacturing Industry*. S. 375–386.

Swedish manufacturing industry has previous held a leading position regarding the development of attractive industrial work environments, but increasing market competition has changed the possibilities to maintain the position. The purpose of this literature study is therefore to describe and analyze how Swedish manufacturing industry manages work environment and production development in the new millennium. The description and analysis is based on recently reported Swedish research and development. The gathered picture of how production systems generally are developed in Sweden strongly contrasts against the idealized theoretical and legal view of how production systems should be developed. Even if some of the researchers' and authorities' ambitions and demands may seem unrealistically high today, there still is a very large potential for improving the processes and tools for designing production systems and work environment.

Faming Wang, Chuansi Gao, Kalev Kuklane, Ingvar Holmér. *A Review of Technology of Personal Heating Garments*. S. 387-404.

Modern technology makes garments smart, which can help a wearer to manage in specific situations by improving the functionality of the garments. The personal heating garment (PHG) widens the operating temperature range of the garment and improves its protection against the cold. This paper describes several kinds of PHGs worldwide; their advantages and disadvantages are also addressed. Some challenges and suggestions are finally addressed with regard to the development of PHGs.