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Číslo 1



PROTECTION OF HUMAN IN THE WORKING ENVIRONMENT

Monika Bartczak & Nina Ogińska-Bulik. *Workaholism and Mental Health Among Polish Academic Workers.* S. 3-13.

The aim of this study was to examine the relationship between workaholism and mental health among 126 Polish academic workers. The participants' mean age was 45.9 years, 51.6% of them were women. The participants completed 2 questionnaires: the work addiction risk test and the general health questionnaire. Even though 66% of the subjects were classified in the group of moderate-to-high risk of workaholism, the overall state of mental health was categorized as average. The results revealed that workaholism was associated with poorer mental health. Employees with higher levels of workaholism had worse state of health, i.e., more somatic symptoms, higher levels of anxiety, insomnia, social dysfunction and symptoms of depression. Emotional arousal/perfectionism was the strongest predictor of the state of general health and was mostly responsible for harmful effects on mental health. However, the general effect of workaholism on health was not as strong as expected.

Vanessa G.P. Shimabukuro, Neusa M.C. Alexandre, Marina Z.O. Coluci, John C. Rosecrance & Maria Cecília J.B. Gallani. *Validity and Reliability of a Job Factors Questionnaire Related to the Work Tasks of Physical Therapists.* S. 15-26.

Physical therapists engage in work tasks that expose them to occupational risk factors related to musculoskeletal disorders. Due to the gap in the literature on instruments focused on those workers, this study adapted a job factors questionnaire to physical therapists, and assessed its psychometric properties. The questionnaire was adapted and its content validity was established. The psychometric properties were evaluated among 142 physical therapists. Reliability was verified using the temporal-stability design and internal consistency. Construct validity was assessed with the known-groups technique. Test-retest results demonstrated intraclass correlation coefficients between .82 and .90 ($p < .001$). Cronbach's α of .91 verified the reliability of the questionnaire. The known-groups technique demonstrated a statistically significant difference on the scores of the items when physical therapists were compared to office workers. The results indicated

that the adapted questionnaire had acceptable psychometric properties for assessing problematic job factors among physical therapists working in hospitals.

Sigurdur O. Sigurdsson, Melissa Artnak, Mick Needham, Oliver Wirth & Kenneth Silverman. *Motivating Ergonomic Computer Workstation Setup: Sometimes Training Is Not Enough*. S. 27-33.

Musculoskeletal disorders lead to pain and suffering and result in high costs to industry. There is evidence to suggest that whereas conventional ergonomics training programs result in knowledge gains, they may not necessarily translate to changes in behavior. There were 11 participants in an ergonomics training program, and a subsample of participants received a motivational intervention in the form of incentives for correct workstation setup. Training did not yield any changes in ergonomics measures for any participant. Incentives resulted in marked and durable changes in targeted workstation measures. The data suggest that improving worker knowledge about ergonomically correct workstation setup does not necessarily lead to correct workstation setup, and that motivational interventions may be needed to achieve lasting behavior change.

Shang Hwa Hsu & Chun-Chia Lee. *Safety Management in a Relationship-Oriented Culture*. S. 35-45.

A relationship-oriented culture predominates in the Greater China region, where it is more important than in Western countries. Some characteristics of this culture influence strongly the organizational structure and interactions among members in an organization. This study aimed to explore the possible influence of relationships on safety management in relationship-oriented cultures. We hypothesized that organizational factors (management involvement and harmonious relationships) within a relationship-oriented culture would influence supervisory work (ongoing monitoring and task instructions), the reporting system (selective reporting), and teamwork (team communication and co-ordination) in safety management at a group level, which would in turn influence individual reliance complacency, risk awareness, and practices. We distributed a safety climate questionnaire to the employees of Taiwanese high-risk industries. The results of structural equation modeling supported the hypothesis. This article also discusses the findings and implications for safety improvement in countries with a relationship-oriented culture.

Tomasz Tokarski, Danuta Roman-Liu & Joanna Kamińska. *The Influence of Age and Type of Force on Muscle Strength Capabilities in Women*. S. 47-57.

The aim of this study was to assess handgrip and 5 other types of force in 52 women and to determine if handgrip force reflected general upper limb force capabilities correlated with age. The women were divided into subgroups according to age: 20–25, 45–50 and 55–65 years. Maximum forces of the right upper limb were measured in 6 types of force activities. In most tests the values of force showed statistically significant differences between the 20–25 group and the groups aged 45–50 and 55–64 years. The results did not show any differences related to age or to force activities that involved the small muscles of the forearms and hands. Thus handgrip force cannot always be considered an indicator of total force capabilities.

Piotr Kowalski & Jacek Zając. *Research on Simultaneous Impact of Hand-Arm and Whole-Body Vibration*. S. 59-66.

This article presents the results of laboratory tests on the combined effect of whole-body vibration (WBV) and hand-arm vibration (HAV). The reactions of subjects exposed to various combinations of vibration were recorded. The vibrotactile perception threshold

(VPT) test identified changes caused by exposure to vibration. Ten male subjects met the criteria of the study. There were 4 series of tests: a reference test and tests after exposure to HAV, WBV, and after simultaneous exposure to HAV and WBV. An analysis of the results (6000 ascending and descending VPTs) showed that the changes in VPTs were greatest after simultaneous exposure to both kinds of vibration. The increase in VPT, for all stimulus frequencies, was then higher than after exposure to HAV or WBV only.

PROTECTION OF HUMAN AT THE WORKSTATION

Hui Wang, Yong-Ku Kong & Myung-Chul Jung. *Postural Evaluation in a Poultry Farm for Broiler Chickens. S. 67-75.*

The goal of this study was to evaluate working postures in 9 operations of poultry farming for broiler chickens for 14 body segments with 4 categories, and for fingers with 14 categories. Overall, the farmers commonly bent almost all their body segments and used power grips. The operations of cleaning with water wand and inspecting chickens seemed light work because the farmers walked around most of their working time. The operations of detaching base from hanging feeder and attaching base to hanging feeder had the farmers continue squatting to handle the feeders close to the floor. The farmers also repeatedly bent their trunks in shoveling feces, unloading a box of chicks, and releasing chicks. A power grip was frequently observed due to using tools with round handles. Workplace design to raise working height would be necessary for a better working environment for broiler farmers.

Jolanta Malinowska-Borowska, Barbara Harazin & Grzegorz Zieliński. *Measuring Coupling Forces Woodcutters Exert on Saws in Real Working Conditions. S. 77-83.*

Prolonged exposure to hand–arm vibration (HAV) generated by chainsaws can cause HAV syndrome, i.e., disorders in the upper extremities of forestry workers. Progress of HAV syndrome depends on the intensity of mechanical vibration transmitted throughout the body, which is directly proportional to coupling forces applied by the woodcutter to a vibrating tool. This study aimed to establish a method of measuring coupling forces exerted by chainsaw workers in real working conditions. Coupling forces exerted by workers with their right and left hands were measured with a hydro-electronic force meter. Wood hardness, the type of chainsaw and the kind of forest operation, i.e., felling, cross-cutting or limbing, were considered.

Isa Halim & Abdul Rahman Omar. *Development of Prolonged Standing Strain Index to Quantify Risk Levels of Standing Jobs. S. 85-96.*

Many occupations in industry such as metal stamping workers, electronics parts assembly operators, automotive industry welders, and lathe operators require working in a standing posture for a long time. Prolonged standing can contribute to discomfort and muscle fatigue particularly in the back and legs. This study developed the prolonged standing strain index (PSSI) to quantify the risk levels caused by standing jobs, and proposed recommendations to minimize the risk levels. Risk factors associated with standing jobs, such as working posture, muscles activity, standing duration, holding time, whole-body vibration, and indoor air quality, were the basis for developing the PSSI. All risk factors were assigned multipliers, and the PSSI was the product of those multipliers. Recommendations for improvement are based on the PSSI; however, extensive studies are required to validate their effectiveness.

Masoud Neghab, Mohamad Amin Norouzi, Alireza Choobineh, Mohamad Reza Kardaniyan & Jafar Hassan Zadeh. *Health Effects Associated With*

Long-Term Occupational Exposure of Employees of a Chlor-Alkali Plant to Mercury. S. 97-106.

This study aimed to evaluate possible health effects associated with long-term occupational exposure to low levels of mercury vapors. Forty-six subjects exposed to mercury and 65 healthy unexposed employees were studied. The subjects were administered a questionnaire on experienced symptoms and underwent clinical examinations as well as routine biochemical tests. Atmospheric and urinary concentrations of mercury were measured, too. Environmental concentrations of mercury were estimated to be $3.97 \pm 6.28 \mu\text{g}/\text{m}^3$ and urinary concentrations of mercury in exposed and referent groups were 34.30 ± 26.77 and $10.15 \pm 3.82 \mu\text{g}/\text{dm}^3$, respectively. Additionally, symptoms such as somatic fatigue, anorexia, loss of memory, erethism, blurred vision and teeth problems were significantly more common among exposed individuals. These observations indicate that occupational exposure to mercury vapors, even at low levels, is likely to be associated with neurological and psychological symptoms.

NOTES

Ivan Mikov, Karmen Stankov, Velibor Vasovic, Aleksandra Mikov, Svetlana Golocorbin-Kon & Momir Mikov. Effect of Simultaneous Exposure to Benzene and Ethanol on Urinary Thioether Excretion. S. 107-111.

The toxicity of benzene is not an issue of the past, especially in developing countries. Bone marrow toxicity is demonstrated among workers. In this study, the effect of simultaneous exposure to benzene and ethanol on benzene metabolism in mice was investigated by measuring the excretion of thioethers in urine. Urinary thioether excretion significantly decreased in the mice receiving both benzene and ethanol compared with the animals receiving benzene only. The assay of determining thioethers in urine samples in this study is a simple and low-cost method, thus suitable for routine use, especially in developing countries, not only for benzene, but also for other alkylating agents, which can be found during occupational exposure. Our results suggest that further research is needed to elucidate the mechanisms of decreased urinary excretion of thioether after simultaneous exposure to benzene and ethanol.