Ergonomics in the office: How body movement improves the muscular-skeletal situation of office workers

Formation ERGONOMA 2004
Session A2 mercredi 7 avril 2004

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Despite the light physical work and the supposed lack of "classic" risk factors for muscular and skeletal diseases, German employees in the office domain in particular are very often affected by muscular-skeletal disorders (see Zoike, 1999).
The predominant neck pains and headaches, neck-shoulder-arm syndromes or lumbar and back aches tend to be reversible. Muscular disorders cause absence from work more rarely than in occupational groups performing heavy muscular labour. Even so the health of employees working in offices has long been acknowledged as an economic factor. This is highlighted by the numerous movement and back exercise programmes implemented by health insurance organisations and companies since the end of the 80s. It has not been established beyond all doubt in what proportion the different facets of office work contribute to muscular-skeletal complaints on account of the multiplicity of causes. There is no doubt, however, that so-called circumstantial prevention, where the optimum, i.e. humane design of working conditions is the prime consideration, is of crucial importance in preventing muscular and skeletal disorders.

The efficiency of ergonomic computer devices par :
Prof. Veerle Hermans (Belgium) received the master degree in physical education in 1990 and a Ph.D. in 1996 from the Katholieke Universiteit Leuven (Belgium), Faculty of Physical Education and Physiotherapy. She worked till 1998 at the Laboratory of Ergonomics and Occupational Biomechanics at this faculty, where she performed various studies related to the analysis of physical load in the laboratory environment and during work tasks. Currently, she is research coordinator at PREVENT vzw, Institute for Occupational Safety and Health in Brussels. She is also professor at the Faculty of Psychology at the University of Brussels, where she teaches ergonomics. She is the president of the Dutch part of the Belgian Ergonomics Society, European Ergonomist and performs reviews for several national and international journals.
Several publications address the increasing number of work-related overuse syndromes during VDT work. Neck and shoulder problems seem to be related to sustained or repetitive awkward neck postures during observing the computer screen. Wrist problems are related to awkward postures when using mouse or keyboard.
Although people used typing machines already for several decades, the risk factors appear to be more pronounced today. Several reasons for this can be found. First, a traditional (mechanical) typing machine caused more dynamic and varied movements (e.g. paper had to be turned in, return of the bar, bigger hand and finger movements). This relives the static component of muscular activity and decreases muscle fatigue. Second, twenty years ago people followed typing courses to learn to type in an efficient way. Today, a lot of people can't type blind and have to interact visually between keyboard, screen and documents. This often causes a flexion of the neck combined with an extension of the head. Third, e-communication introduced the possibility to work isolated from a computer station. Less printing, faxing, telephoning occurs, which means less necessity to leave the worktable now and then and to stand up and walk around. To decrease bad postures when working at a computer station, new ergonomic devices or aids are promoted. This paper resumes the up-to-date knowledge on the efficiency of these devices.

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about a hundred conference papers, book chapters and reports on different aspects of ergonomics;
Work-related musculoskeletal disorders (MSD) constitute a major problem in the industrialised world. E. g., they are considered to be the largest
single category of work-related illnesses in the US, Japan and Nordic countries according to official statistics. It is mainly the upper extremities, shoulder/neck and the upper and lower back that are affected. The strength of evidence for a relationship to occupational conditions varies with location and type of exposure and should not be further discussed here. MSD is far from a single medical diagnosis. It should be considered as a class of disorders with the common denominator that it causes pain and discomfort from the musculoskeletal system. Several tissue structures can cause MSD such as muscles, tendons, nerves and joints. In some cases it is clear which organ or structure causes the problems and a more or less well grounded diagnosis can be identified. In other cases, the disorders are more diffuse and it is hard to identify a single organ or structure from which the disorders emanate. The disorders can be caused by direct mechanical trauma but as we will see, other types of time related effects may be seen where e. g. the energy transformation system in a muscle may be affected.

-Comment assurer la sécurité et l'ergonomie des postes de travail par de nouvelles méthodes de monitoring et de simulation.par
Prof. Danuta KORADECKA (Poland), Ph. D., D.Med. Sc. entire career has been focused on Medical Sciences.; in 1989 she received the title of Professor of Medical Sciences. Since 1965 she has been working in the Central Institute for Labour Protection (Warsaw, Poland); since 1989 - as the Director. Her main research interests include health damage due to occupational exposure to hand-transmitted vibration, ergonomics research on the human body's response to the combined effects of several pathogenic factors: vibration, noise, low temperature and static load. The Institute, the Central Institute for Labour Protection (CIOP). headed by Prof. Koradecka has been honoured in the field of occupational safety and health protection for its overall activity by the World Safety Organisation in the Consultative Status, to the United Nations (1998). The Human Factors and Ergonomics Society (member of the International Ergonomics Association) awarded Prof. D. Koradecka personally the Dis! tinguished International Colleague Award for outstanding contributions to the human factors field (2000).
Many scientific fields contribute to the achievements in ergonomics, including antropometry, biomechanics, physiology, and psychology. Assurance of conformity with all the requirements of safety and ergonomics at the workstations is a fundamental prerequisite to limiting various hazards, especially dysfunctions of muscle and skeletal system.
Dysfunctions of the muscle and skeletal system, which may be the result of one-time or multiple cumulative micro-injuries, have become the third biggest cause of work inability in the years 2000-2001. These disorders concern mainly the back and joints (arthropaties) and occur most frequently in workers aged 45-50 (Bugajska and Łastowiecka, 2003). Prevention of the dysfunctions of the musculo-skeletal system, which stem from an excessive work-load of the employee, requires an objective evaluation followed by an optimisation of the conditions at the workstations. Due to a significant correlation between work-load and the dysfunctions of the muscle-skeletal system, it becomes important to develop suitable methods of evaluation of the work-load of the employee in association with the character of the tasks performed at the given workstation. New methods are being designed at the Central Institute of Labor Protection – National Research Institute (CIOP-PIB), which aid in a!
n easier and, simultaneously, a more precise evaluation of the employee load, and maximally improve the work conditions,. Measurement methods, which utilize the most modern technical achievements, theoretical models, including computer modelling, constitute the basis of these designs.

- Reduction in musculoskeletal disorders: a reality based on a large scale epidemiological study Par/ by

Dr.Jason DEVEREUX (United Kingdom) Ph.D M.Sc BEng (Hons) M. Erg.S. Eur. Erg. Dr. Jason Devereux holds a Doctorate in Ergonomics Epidemiology and Musculoskeletal Disorders from the Robens Centre for Health Ergonomics, University of Surrey, a Masters Degree in Ergonomics from University College London and a Bachelor of Engineering Degree from Southampton University. He is a Certified European Ergonomist (CREE), a registered member of the Ergonomics Society and is also on the Ergonomics Society Professional Register. Dr. Jason Devereux has published in international peer reviewed scientific journals including those of the British Medical Journal Publishing Group, has co-authored a report for the European Agency for Safety and Health at Work, Spain on behalf of the European Commission on the scientific knowledge of neck and upper limb musculoskeletal disorders; and has been invited as an international expert on work-related musculoskeletal disorders by European Government Organisations

"I would like to start by considering the scientific evidence that guides an optimal prevention approach for managing work-related musculoskeletal disorders. Then I will describe briefly 2 case studies using participatory ergonomics and I will show you the long-term outcomes. I will finish by justifying participatory ergonomics for providing a statutory duty of care under the European Framework Directive.

The latest research suggests that physical & psychosocial workplace risk factors, perceived stress and other individual reactions increase the risk of MSD's. Employers have a legal duty of care to the individual Ergonomic Improvement Teams are a useful method for satisfying a legal duty of care. Expert ergonomics supports Ergonomics Improvement Teams for making workplace interventions. Evidence based practice supports the use of Ergonomics Improvement Teams"

-La nécessité de la multiculturalité de la prise en charge de la prevention des Troubles –Musculo-Squelettiques.par :

Jean –pierre ZANA (France) Expert conseil INRS Paris - département Eq. du travail et Ergonomie

La progression exponentielle des TMS n'est plus à démontrer. On évoque même l'expression de « catastrophe sanitaire » lorsqu'on annonce les chiffres de ces maladies professionnelles déclarées qui représentent en 2002, 76 % de l'ensemble des maladies professionnelles. A titre de comparaison, les cancers professionnels dus à l'amiante ne représentent que 12 % de ces maladies. Il convient de rappeler que ces

pathologies concernent l'ensemble des secteurs d'activité et leur origine est plutôt bien définie.

En effet, les chercheurs européens et internationaux s'accordent pour reconnaître une triade factorielle comprenant les facteurs biomécaniques, les facteurs psychosociaux et les nouvelles formes d'organisation du travail. La conjugaison de ces facteurs a une incidence plus importante sur l'apparition et le développement des TMS.

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