Journal of Ergonomics
ISSN: 2165-7556

Kim, J Ergonomics 2014, S4
DOI: 10.4172/2165-7556.S4-e001

Editorial Open Access

Ergonomics and Musculoskeletal Disorders

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We use our body and body parts to carry, lift, move, sit, stand, walk, and work in a variety of situations and ways every day. However, sometimes these tasks or the ways we conduct them can put too much demand on our bodies and body parts, causing pains, discomforts, and even injuries. It may lead to a serious injury called a musculoskeletal disorder (MSD). MSDs develop as a result of repetitive, forceful or awkward movements on our body and/or body parts of bones, joints, ligaments and other soft tissues. MSDs often severely affect soft tissues such as muscles, tendons, ligaments, nerves and blood vessels. These disorders also have been referred as: repetitive strain injury (RSI), cumulative trauma disorders (CTDs), and overuse injuries. These types of injuries involve muscles, tendons, ligaments and nerves.

Work-related MSDs are one of the leading types of occupational injury and incur the greatest costs to the industry and the workers' compensation system. Workplace pains and strains can be serious and disabling for workers, causing pain and suffering ranging from discomfort to severe disability. The consequences are far reaching and can affect every aspect of a worker's life. MSDs are also costly for employers. They are the number one reason for lost-time claims reported to the workplace safety board, resulting in huge direct and indirect costs for employers. There is a strong link between exposure to the work-related risk factors for MSD and the development of these disorders. These injuries can be prevented. Taking appropriate steps to eliminate or reduce the exposure to the work-related risk factors can minimize the risk of MSDs in the workplace. MSD prevention can be simple and inexpensive. Often making straight-forward and basic changes can reduce MSD risks significantly. However, MSDs continue to be a major source of disability and lost work time in the workplaces.

There has been an increasing effort in recent years to investigate the causes of MSDs and to take action to prevent them. This has led to intensifying recognition from workers, employers and government agencies that a strong relationship exists between factors within the working environment and the development of MSDs, and that these conditions result in significant sickness absence and reduced productivity. The science of contemporary ergonomics and its application to MSDs associated with the modern workplace provide both an important perspective and a preventative approach. The breadth and impact of ergonomics extends well beyond what is often presented in the literature.

In this sense, it is imperative that a special issue on "Ergonomics and Musculoskeletal Disorders" from Journal of Ergonomics provides an up-to-date insight into how modern Ergonomics has enhanced our understanding on the nature of the disorders, their work-relatedness and their potential prevention. Greater adherence to the ergonomic process in design and assessment of work systems would be the most likely strategy for securing long-term primary prevention of the MSDs worldwide. The selected seven articles for this special issue cover a variety of topics addressing issues and problems ranging from incidence reviews to problem solving with experimental and analytical studies on the MSDs.

The first paper prepared by Ellapen TJ, Narsigan S, Abrahams S and Desai FA reports the prevalence of work related musculoskeletal pain from University administrators. The uniqueness of this study is an identification of association between flexed vertebral sitting posture and work-related musculoskeletal pain. The second paper prepared by Lea Sell, Andreas Holtermann, Angelika Hauke and Karen Søgaard evaluates a tailored ergonomic learning program for the development of low strain working techniques in respect to reducing the level of MSD among the employees at an industrial work place. The third paper prepared by Ellapen TJ and Narsigan S reviews the incidence and prevalence of work related musculoskeletal disorders among nurses as a possible attributing factor of attrition from the occupation. This review study identifies that nurses are vulnerable to work-related MSD, especially lower back pain and injury. The fourth paper prepared by Justine MY Chim summarizes the research results on the legislative requirements and guidelines for office ergonomics practices in Hong Kong, Singapore and Japan. This study addresses that an effective office ergonomics program should be tailor-made and promoted in the Asian region. The fifth paper prepared by Rekha Vyas analyse the musculoskeletal problems of agricultural workers and assess the overall discomfort and body part discomfort perceived by agricultural workers while performing farm activities. The study also points out that training and education for MSD awareness and safety have become imperative to improve the quality of life for the largest workforce of the country. The sixth paper prepared by Megan O. Conrad and Richard W. Marklin evaluates muscle fatigue due to motorcycle clutch use in an existing clutch and compares the results to the fatigue produced when the same riders used an improved clutch design requiring a shorter grip span and less grip force. The seventh paper prepared by Davis KG, Hammer MJ, Kotowski SE, and Bhattacharya A investigates relationships between adopted whole body postures and body discomfort when entering data with two modes: a touch screen and keyboard. This study reports that the angled touch screen is found to be equal or better than the traditional keyboard data entry device. As a result, sit-stand tables may be beneficial to call centre employees who change their positions between standing and sitting.

I expect that the seven papers in this issue add new knowledge to our understanding on the topic area for Ergonomics and Musculoskeletal Disorders. I would like to express my sincere gratitude to all the contributors with editorial teams for this special issue tirelessly.

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Received June 10, 2014; **Accepted** June 12, 2014; **Published** June 19, 2014

Citation: Kim IJ (2014) Ergonomics and Musculoskeletal Disorders. J Ergonomics S4: e001. doi:10.4172/2165-7556.S4-e001

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