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Effect of ergonomic intervention on productivity, health and safety of unorganized sector workers in India

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Large portion of the workforce in India is found to be employed in the unorganized sector. Sand core making is one of the unorganized sectors in India and it's a manual process, in which two types of cores are prepared carbon dioxide sand core and chemical sand core. Gold ornament making industries belong to the unorganized sector and a large number of goldsmiths are working there. Another common unorganized sector of India is carpenter, who are involved in the construction of different types of furniture and other objects made up of wood. In this study an attempt was made to improve the work process of different unorganized sectors for the betterment of health as well as enhancing productivity. In the present study, 100 male workers were randomly selected from each unorganized sectors of sand core worker, goldsmiths and carpenter from West Bengal, India. Physical parameters of the workers of this study were measured. A detailed questionnaire study on discomfort feeling was done by the modified Nordic questionnaire. The existing workstations were assessed by the measurement of work areas. Analysis of body posture was done to evaluate the work stress during their job. A new ergonomic intervention was introduced to the unorganized sectors with their active suggestions. Subjects were interviewed at the end to ascertain intervention acceptance. The study revealed that all these three unorganized sectors jobs are performed in awkward postures, with the potential risks of musculoskeletal disorders primarily affecting the low-back region. The existing processes of core making involved some unnecessary steps, which reduced the rate of work and increased ineffective time. The modified process enhanced productivity in both types of core making processes by eliminating these steps. A change in the existing workstation design increased productivity in chemical sand core making. One of the main activities of the goldsmiths is Blowing Pipe. This work habit increases the fatigue of facial muscles, at the end of the day. In this study an ergonomic intervention (hand air pipe) were provided them. This way in this current study we eliminate the hazards of manual Blowing Pipe activities of the goldsmiths. By introducing the mechanical hand air pipe, it can reduce or can give relief the goldsmiths from various occupational hazards. As indicated by RULA action levels, most of the postures adopted by carpenters with existing handle are awkward and non-linear in nature. To overcome such problem nine modified handles of hand saw have been designed as M1 to M9. By the evaluation process it was found that M7 & M8 can reduce the fatigue of hand muscles and can improve the carpenters health during work, which can be treat as the increment of productivity.

Biography

Tirthankar Ghosh is Managing Editor of International Journal of Occupational Safety and Health and an Occupational Ergonomist. Presently he is working as Associate Professor of Physiology at Maitri Educational Society, India. His research areas are Occupational Health, Workstation study & design, Intervention Design, Productivity Improvement of work & worker's. He received his MSc and PhD degree by University of Calcutta, India. He has an experienced of 10 years of teaching and research experience. He has 35 research articles published in refereed journals, 25 papers published in Conference Proceedings. He is member of various societies like Physiological Society of India, Ergonomics Society of India, and International Commission on Occupational Health.

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