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Analyses of Risk Observation: The Future of Occupational Health and Safety

Mark Rothstein*

Department of Public Health, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia.

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Description

Workers' injuries are caused by workplace hazards or harm. A variety of factors, including human, chemical, biological, or physical factors, can re-sult in occupational injuries. Numerous devices or methods for detecting or preventing occupational injury risk have been developed as a result of new technological advancements. However, the industry continues to rely on the traditional workforce for a significant number of its operations, which raises the risk of occupational injuries. Musculoskeletal injuries are the most common type of occupational injury, and doing the same things over and over or working in particular ways are the most common causes. Musculoskeletal disorders are strongly cor-related with the physical and social environment, according to studies from a decade ago. The other report says that roughly 65.16 percent of workers had physical pain before.

As a result, musculoskeletal injuries continue to be the most common occupational disease. Musculoskeletal system injuries can sometimes be irreversible, reduce worker productivity, and require costly and time consuming medical treatment or rehabilitation. Numerous studies on how to prevent musculoskeletal injuries therefore focus on estimating the risk of work related musculoskeletal disorders in the workplace, musculoskeletal posture, working duration, and weight-bearing, among other factors.

Estimating the likelihood of occupational injuries is frequently done using occupational assessment techniques. Depending on the guidelines of each assessment method, the investigator would score the degree of risk by observing working posture, loading, the environment, or other factors. The Ovako Working Posture Analyzing System (OWAS), Rapid Entire Body Assessment (REBA), and Rapid Upper Limb Assessment (RULA) are among the evaluation methods that are utilized the most frequently. This is due to the industry's convenience and ease of use of occupational assessments. If the wrong assessment method was used, the risk of the posture would be underestimated because it would be chosen based on the operational movement's characteristic. As a result, some studies either compare the results of two distinct assessment methods or conduct two assessments simultaneously. Given how important it is, one of the objectives is to offer a strategy for choosing the best assessment methodology. Additionally, these manual ergonomic assessment methods are based on the identification of joint angles, actions, or postures by a specialist. Due to subjective bias, the high-risk position would be overlooked during an operational period. Because the occupational assessment must be performed offline, the conventional method makes it difficult to provide either immediate improvement or long-term monitoring of the risk of occupational injury. In a typical video, there are 500 frames, or 18 seconds, and manually reviewing these frames takes a long time and is prone to error. Therefore, a useful and practical strategy would be to automate the selection of high-risk frames for additional investigation.

The optical motion capture system is difficult to set up in the workplace, and the accuracy of the reflective marker will be affected by the environment. Both the operation's movement and the assessment's outcomes will be affected as long as the method of acquisition requires an optical marker or sensor to be attached to the body. The image-based method uses RGB images to calculate motion and joint angles without the use of body sensors or stick markers. The general camera may be a useful and simple tool for data collection in the factory, and the subject's body posture and motion video can be recorded for a long time.

Contact: Mark Rothstein, Email: rothsteinmarka470@gmail.com