

## **The analysis of risk factor repetitive motion in manufacturing activities based on ergonomics**

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### **ABSTRACT**

The research of ergonomics in the glove manufacturing company was done in the production line. The workers performed most of the processes manually. Consequently, they were exposed to Musculoskeletal Disorders (MSDs) risk factors such as repetitive motion and awkward postures while working. In this case study, the Rapid Upper Limb Assessment (RULA) was used to determine the worker's risk level of MSDs. It was based on a working assessment of video records and photos by the workers. The final RULA score found that the former changing process indicates the high risk of MSDs, investigating, and implementing change required. Besides, the final RULA score of glove rework scores a five. The score indicates a medium risk of MSDs, need further investigation, and change soon. Meanwhile, the glove packing process scored four which indicates a low risk of MSDs and changes might be needed. Other than, the Body Discomfort Survey was answered by the workers ( $n = 18$ ), and the mean MSDs impact scores from the survey concluded that workers felt discomfort the most in the former changing (53,264.75), followed by glove rework (12,419.67), and glove packing (6313.33) process. The DELMIA software was then used to evaluate the improved body postures. The analysis provided the limitations of angular movement of body parts, allowing the manikin to bend at a minimum angle to fit the task while also reducing the final RULA score to an acceptable score.

### **KEYWORDS**

Musculoskeletal Disorders (MSDs); Rapid Upper Limb Assessment (RULA); Body discomfort survey

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