

Inter-Rater Reliability of Ergonomic Risk Assessment Methods

Atefeh Siah Ahangar¹, Sahebeh Ghanbari², Majid Hajibabaei^{3*}, Mahnaz Saremi⁴, Narges Azadi¹, Fereshteh Jahani¹, Sanaz Karim Pour¹, Moslem Abedini¹, Hassan Mohammadpour⁵

¹ MSc of Occupational Hygiene, School of Health, Students Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran • ²health products safety research center, Qazvine university of medical science, Qazvine, Iran • ³PhD student of Occupational Hygiene, Department of Occupational Health Engineering, Students Research Committee, School of Public Health and safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran • ⁴Assistant professor, Department of Ergonomics, School of Public Health and safety, Shahid Beheshti University of Medical Science, Tehran, Iran • ⁵MSc of Occupational Hygiene, Department of Occupational Health Engineering, Students Research Committee, School of Public Health and safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran • *Corresponding author: Majid Hajibabaei, Email: mhajibabaei2050@sbmu.ac.ir, Tel: +98-0912-4134720

Abstract

Background: Musculoskeletal disorders are one of the most common occupational diseases, and in recent years, several methods have been developed to evaluate risk factors for these types of disorders. **Methods:** In this cross-sectional study, 40 tasks in small industries including carpentry, turning, welding, loading and unloading, and sewing were recorded with a video camera and in the second stage, the postures were reviewed and evaluated by six raters. In total, forty of the worst and most frequent postures were analyzed by self-raters and then, the same risk levels were determined for the six methods and analyzed with correlation and Kappa agreement coefficient tests using SPSS (version 19), and then they were compared with each other using the Intraclass correlation coefficient (ICC). **Results:** The results revealed the importance of Kappa Coefficient in which it shows the risk level of different method and specified pair method: OCRA/SI = 0.25, OCRA/HAL = 0.2, SI/HAL = 0.32, SI/ RULA = 0.33, REBA/OCRA = 0.4, QEC/SI = 0.27, QEC/ RULA = 0.23. Inter-rater Reliability of the methods was found as follow: ICC/OCRA = 0.3, ICC/SI = 0.67, ICC/HAL = 0.8, ICC/RULA = 0.85, ICC/REBA = 0.8, ICC/QEC = 0.972. **Conclusions:** The results showed that there was no complete agreement among the methods. This agreement among methods is evaluated from poor to good (0.2-0.4). The ICC showed high reliability in the methods except in the OCRA method.

Keywords: Risk assessment, Reliability, Agreement of Methods, Posture.

Introduction

The advancement of technology has led to change in the situations and working conditions of the industrial workers.^{1,2} Today, many of the workers have aligned themselves with the inappropriate work environment.^{3,4} Work-related musculoskeletal disorders are one of the most common

occupational diseases and the cause of many disabilities in developing industrial countries.⁴⁻⁷ According to studies conducted from 1992 to 2010, these disorders account for 29% to 35% of absenteeism among workers.⁸ Musculoskeletal disorders computed %31 (356,910 cases) for all workers of the total cases in

Citation: Siah Ahangar A, ghanbari S, Hajibabaei M, Saremi M, Azadi N, Jahani F, et al. *Inter-Rater Reliability of Ergonomic Risk Assessment Methods*. Archives of Occupational Health. 2019; 3(1): 259-67.

Article History: Received: 20 September 2018; Revised: 21 December 2018; Accepted: 27 December 2018

Copyright: ©2017 The Author(s); Published by Shahid Sadoughi University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.