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Ergonomics for Design and Innovation

Humanizing Work and Work Environment: Proceedings of HWWE 2021

Springer

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ISSN 2367-3370 ISSN 2367-3389 (electronic)
Lecture Notes in Networks and Systems
ISBN 978-3-030-94276-2 ISBN 978-3-030-94277-9 (eBook)
https://doi.org/10.1007/978-3-030-94277-9

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Modifying the Revised NIOSH Lifting Equation in the Presence of Noise

Nadeem Ahmad, M. Muzammil, and Saman Ahmad

Abstract An Experimental research was conducted to modify the revised NIOSH lifting equation (RNLE) by determining the effect of various noise levels on recommended weight limit (RWL) during symmetric and asymmetric lifting. Seven male college students were recruited as participants. Each participant performed 16 different lifting tasks. Subjects were required to lift a box from the floor to a 76 cm high pallet for a period of 15 min. A psychophysical methodology was used to establish the acceptable lifting frequency for different combinations of load, asymmetry and noise levels. Oxygen consumption was also measured both at rest and immediately after the experiment. The observations gathered were analyzed using ANOVA, which showed a significant effect of all three variables viz load, asymmetry and noise on lifting frequency as well as oxygen consumption. RWLs were calculated using RNLE and it was observed that they decreased with increase in load, asymmetry and noise. On the basis of the experimental results a RNLE multiplier was suggested for load lifting in the presence of noise.

Keywords Noise · Load lifting · Revised NIOSH lifting equation · Recommended weight limit

1 Introduction

Despite increasing automation, manual mode of lifting remains indispensable, especially in situations where human beings are responsible for taking instant decisions depending on circumstances [1]. In developing countries like India there is an abundance of cheap manual labor. Further, in developing countries there is a dearth of governing body/controlled law to safeguard the interest of workers making them

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D. Chakrabarti et al. (eds.), *Ergonomics for Design and Innovation*, Lecture Notes in Networks and Systems 391, https://doi.org/10.1007/978-3-030-94277-9_119