ABSTRACT

Title: Cardiorespiratory Fitness for Workers Working At Height
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Abstract:

Introduction; Globally, falls are the second leading cause of unintentional injury deaths, with 80% occurring in low-and middle-income countries at the constructions sectors. In another extends, working at height contribute more fatality. Fall can occur on the same level as a result of slipping or tripping, or at a different level, such as a fall from a height. Despite the awareness and SOP regarding safety been prepared accordingly, the health status of the workers does not be screen. **Methodology;** A cross sectional study is designed with the aim to determine the relationship between health related factor (cardiorespiratory fitness) and heart rate among 240 workers working at height. A purposive sampling method was used to select on the respondents based on inclusive criteria such as age between 25 to 50 years, and not less than 5 years working in constructions. Questionnaire develop and being used in NIOSH services was used to collect information and socio-demographic and health related factors during working. Heart rate monitor used was Zephyr BioHarness 3 heart rate monitor. Result; The highest average heart rate was within the 3rd and 4th hours of the monitoring. The mean were 167 ± 9 bpm and 169 ± 7 bpm accordingly. However, between all the health related factors from the questionnaire there were no significant relationships on the increasing of heart rate during working. On the RPE Borg scale showed most of them only at the vigorous activity at the end of the 4th hour. **Discussion;** Based on the finding, it shows that the heart rate zone during the 3rd and 4th hours exceed most of the 80% of the maximum heart rate. According to Lee, W., & Migliaccio, G. C. (2014), 80% of the maximum heart rate consider be at the distress level and can be assume that a worker who stays in the zone 4 ad above for a long time period will potentially start to feel disconnected and unproductive in job task. Based on the Borg Scale, most of them only at the vigorous where the physiological changes showed maximum activity. The experiment might have introduced bias in the subjective feedback (RPE) from the participants in form of expectation discrepancies between ‘how one feels’ and ‘how one thinks one should feel. **Conclusion;** This study showed preliminary evaluation on the cardiovascular fitness as a worker-inspection system that could indicate overexertion, prevent potential worker injury, illnesses, and cardiovascular overload. However, further testing such as spiroergometry testing could be valuable information compared to monitoring heart rate for physical fatigue assessment.

Keyword: cardiorespiratory fitness; health-related factor; wearable sensing; working at height; construction