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BRICKLAYER-ASSISTANTS WORK ANALYSIS: WEIGHT LIFTING RISKS IN MORTAR'S PREPARATION TASKS

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Construction tasks are diverse, containing many weight handling duties. Bricklayer-assistant's work is one of the most demanding jobs in this respect. This job has a poor record of occupational health, in particular with regard to WMSDs (Valero, 2016). At the work site, the most demanding tasks for the assistant, in terms of physical work are: manual lifting, transportation and carrying of materials and pushing/pulling wheelbarrows for more than four hours every working day (van der Molen et al., 2017). Construction workers are exposed to a wide variety of health hazards at work (Alazab, 2004). Working in the construction industry typically requires awkward postures, heavy lifting, and considerable exertion. Many workers performing such tasks complain of discomfort in their upper extremities and lower back over the course of a workday (Buchholz et al., 1996; Jeong, 1998; Hoozemans et al., 2001; Davis et al., 2010). Several studies identified that there is a relationship between awkward postures and pain symptoms and injuries in the musculoskeletal system (Grandjean and Hunting, 1977; Corlett and Manenica, 1980; Westgaard and Aar, 1984; Haslegrave, 1994). WMSDs represent major health issues for construction workers yet risk factors associated with repetitive lifting tasks remain unexplored (Antwi, 2017). This job is more labor-intensive compared to other industries. Over long periods of time, this sustained physical labor causes bodily injuries to the workers which in turn, conveys huge losses to the industry in terms of money, time, and productivity. Various safety and health organizations have established rules and regulations that limit the amount and intensity of workers' physical movements to mitigate work-related bodily injuries (Nath, 2017). Awkward postures in construction activities pose substantial hazards in both instantaneous injuries and long-term WMSDs (Chen, 2017). According to official figures, the declared workforce in the building and construction sector in Algeria counts for 19.9% of the total active workforce in 2013 (ONS, 2013). But these figures should be taken with some reserve, they might be much higher, as undeclared workforce

(informal employment) is a widespread practice in this sector of activity (Mebarki, et al., 2015). According to the Algerian Office of Statistics (ONS, 2012, p.11), 3.9 million Algerians out of 9.7 million of the employed population are working in the informal, 37.4 % of them are in the building and construction industry. The aim of the present study is to investigate the effect of weight lifting during mortar's preparation tasks in bricklayer's assistants' job. Through the determination of lifting index (LI), and physical workload imposed by mortar preparation tasks. The data were collected from a sample of seventy-three (73) assistant-bricklayers, their demographic characteristics were as follows: average age of 35.8 (\pm 9.2) years, mean weight of 72.7 (\pm 4.3kg), mean height of 171.4 (\pm 4.0cm), and a seniority in the profession ranging from 02 to 26 years With an average of 7.4 (\pm 5.0 years). To assess the variables of the study the following tools were used: (1) direct observation, video recording, (2), the method of National Institute of Occupational Safety and Health (NIOSH) and the Ergo-Fellow software to assess the maximum permissible weight lift, beside (3) the scales of Borg RPE and CR10. Assessment of the physical workload of tasks showed that the steps involving the cement mortar preparation involved a physical load for the sample studied. The results of the assessment of the difficulty of work (The painfulness) by the Borg scales during the morning and evening work periods showed no statistically significant differences between the two work periods in the different regions of the body. However, maximal values were observed for all workers in the lower back during the two periods of the day, with a 50% equivalent effort, and 48.8% in the evening to the maximum voluntary force (FMV). The results of the NIOSH method gives a lifting value LI = 11.11, exceeding the value allowed for lifting by nearly 4 times. In order to alleviate occupational hazards and reduce physical workload imposed by improper task/job design, appropriate recommendations are put forward.

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